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# RESEARCH REPORT

FINAL REPORT

on

A SURVEY OF AEROSPACE EMPLOYEES AFFECTED  
BY REDUCTIONS IN NASA CONTRACTS

May 20, 1971



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Columbus Laboratories

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505 KING AVENUE • COLUMBUS, OHIO 43201

FINAL REPORT

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to

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

BATTELLE  
Columbus Laboratories  
505 King Avenue  
Columbus, Ohio 43201

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FOREWORD

This report contains the results of work performed under contract No. NASW-2176, for the National Aeronautics and Space Administration (NASA). The project was administered for NASA by Mr. Ronald M. Konkel. At Battelle's Columbus Laboratories, the project was under the administrative control of Mr. James A. Bontadelli, Management Systems Group. Mr. Robert N. Pesut was project leader of the study. Contributions to the research effort were made by G. Beatty, N. Wiard, D. Molnar, N. Lobdell, T. Stohr, D. Metcalfe, and F. Cesario.

Presented are the results of a survey of aerospace employees affected by reductions in NASA contracts. The study was primarily directed toward data gathering rather than analysis. Time considerations dictated an early summarization of the basic survey results in sufficient detail to make the data available to various potential users. As a consequence, the report is heavily detailed in the presentation of the statistics gathered through the survey. Those readers seeking a general overview of the survey results, without the detail of the main body of this report, are referred to the report summary.

The report is organized topically in the following order:

- Introduction and Purpose of the Study
- Methodology and Conduct of the Study
- Characteristics of the Survey Subjects
- Analysis of Survey Data:
  - Extent and Duration of Unemployment
  - Utilization of Aerospace Skills
  - Economic Impact
  - Relocation Experience/Mobility
  - Job Search and Assistance
- Data Processing Procedures

The executive summary and conclusions preceding the main body of the report basically follows the same organization.

In addition to the data summaries provided by this report, more detail is available in a separate document, the technical addendum to this report, containing the computer tabulations generated for the study. Computer tapes containing the basic data collected for the survey have been provided to the Cost and Economic Analysis Branch, Office of Administration, The National Aeronautics and Space Administration. Researchers interested in this data should contact this agency.



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May 20, 1971

REPORT SUMMARY

This report contains the results of a survey of aerospace employees affected by reductions in NASA contracts, conducted by Battelle's Columbus Laboratories (BCL) for the National Aeronautics and Space Administration.

Initially, NASA contacted various persons in the Office of Management and Budget, the National Aeronautics and Space Council, the National Science Foundation, and the Department of Labor, seeking information on workers displaced as a result of the cutbacks in NASA programs. These contacts indicated that not enough was known about the short-term adjustments in the labor market for these persons. NASA also contacted the Aerospace Industries Association and some of the agency's major contractors in the aerospace industry. Short questionnaires were sent to nine major contractors requesting information on how these companies had achieved major NASA employment reductions (i.e., the extent to which they were able to "absorb" reductions within the company and the extent of the actual layoffs from the NASA cutback). The results of any follow-up studies that the companies may have conducted on their own initiative of laid-off workers were also requested.

The most important findings of this preliminary survey from 8 companies representing 30 separate establishments were:

- (1) Forty thousand (40,000) layoffs resulted from NASA cutbacks at the 30 establishments between June 1966 and June 1970. Seventeen thousand four hundred (17,400) occurred during FY 1970.
- (2) Over the whole period 1966-1970, the ratio of layoffs to total NASA-related employment reductions was 0.70. During FY 1970, this ratio rose to 0.97.
- (3) Projected layoffs during FY 1971 will be only about one-half as large as those during 1970. The skill-mix of the FY 1971 reduction will be higher. During FY 1971, the percent of total employment reductions in the professional categories will be 49.2 percent, as opposed to 36.7 percent during FY 1970.
- (4) Several contractors reported that as many as one-half of their displaced workers were presently unemployed.

In order to gain further information on these displaced workers, NASA contracted with BCL to conduct a mail survey of these persons. The survey was directed toward collecting data for the following areas of interest:

- (1) The rate and duration of unemployment among displaced aerospace workers;
- (2) The extent of underemployment among those workers who had found re-employment as evidenced by changes in occupational levels and/or salary levels;
- (3) Differential patterns of unemployment and underemployment among various skill groups;
- (4) Losses to Federal and State budgets resulting from unemployment;
- (5) The extent of geographic and occupational mobility among displaced workers.



As an initial step in the survey, a universe listing of displaced workers to be sampled was requested by NASA from the preliminary survey of 9 NASA contractors. These contractors had been screened to assure that those selected for the survey would include the most significant NASA-induced contractor layoffs. Specific plants were selected for the survey only if total plant employment declined significantly in relation to the NASA cutback. The plants were also selected to achieve representative geographic coverage. Mailing lists for displaced workers from twenty-one establishments representing seven contractors were obtained. The companies and plant locations selected were the following:

- (1) Bendix  
Kennedy Space Center, Florida (Apollo Launch Support)  
Various locations (Manned Space Flight Network Operations)
- (2) Boeing  
New Orleans, Louisiana (SIC Stage)  
Huntsville, Alabama (Saturn V Systems Integration and GSE)  
Kennedy Space Center, Florida (Launch Operations)  
Houston, Texas (Technical Support)  
Washington, D. C. (Technical Support)
- (3) Chrysler  
Huntsville, Alabama (SIB Vehicle Integration and GSE)  
Kennedy Space Center, Florida (SIB Cape Support)  
New Orleans, Louisiana (SIB Stage)
- (4) Grunman  
Various locations (Lunar Module Manufacturing and Support)
- (5) McDonnell/Douglas  
Huntington Beach, California (SIVB Stage, Delta)  
Sacramento, California (Stage Testing - SIVB Stage)  
Santa Monica, California (Program Support)  
Florida Test Center (Launch Operations)  
Vandenberg Test Center, California (Launch Operations)
- (6) North American Rockwell  
Downey/Seal Beach, California (CSM, SII Stage)  
MTF, Mississippi (Static Testing - SII Stage)



Kennedy Space Center, Florida (Launch Operations)  
Canoga Park, California (F-1 and J-2 Engines)

(7) R.C.A.

Princeton, New Jersey (TIROS and NIMBUS)

The mailing lists included all persons at each plant location laid off as a result of reductions in NASA funding between June 1968 and October 1970. (McDonnell/Douglas and Grumman provided only partial listings.) The mailing lists included 27,171 persons. In Chart A, the average length of service and average weekly wage or salary at time of layoff is presented for these persons. The distribution of the displaced workers among the contractors is also shown.

The listing of persons was stratified by the company and plant location from which they were laid off, and according to their skill classification, and ordered by date of layoff within the stratification.

A systematic sample of 5,000 persons was selected from the stratified, ordered listing, assuring representation in that the sample has the same distribution as the universe in terms of company and plant representation, skill classification, and date of layoff.

A detailed questionnaire was developed for the survey based upon discussions with representatives from BCL, NASA, the Office of Management and Budget, the Bureau of Labor Statistics, and the National Science Foundation.

The questionnaire was mailed to the sample of 5,000 persons, and a follow-up letter and questionnaire were mailed to nonrespondents. The initial mailing resulted in 2,017 returns and the follow-up mailing yielded additional 502 returns. Nondeliverable questionnaires returned numbered 318. Questionnaires continue to arrive but could not be processed in time to be used in this report. The response rate, based on delivered questionnaires, represented by the 2,519 returns processed for the report, is 53.8%. Chart B summarizes the distribution of questionnaires mailed, and returns by skill classification. It is encouraging to note that the distribution of returns closely parallels the distribution of mailed questionnaires, indicating that the returns are representative of all skill classifications in the proportions that they appeared in the original listing, and are not biased toward any particular



Company	Number of Layoffs	Average Years of Service	Average Weekly Salary or Wage
Bendix	896	2.54	\$177
Boeing	5,864	4.76	181
Chrysler	2,163	5.84	196
Grumman	1,319	3.33	169
McDonnell/Douglas	268	6.57	193
North American Rockwell	16,621	8.49	185
RCA	40	5.76	247
Total	27,171	7.00	\$184

CHART A. AVERAGE YEARS OF SERVICE AND BASE WEEKLY  
SALARIES FOR THE UNIVERSE LISTING

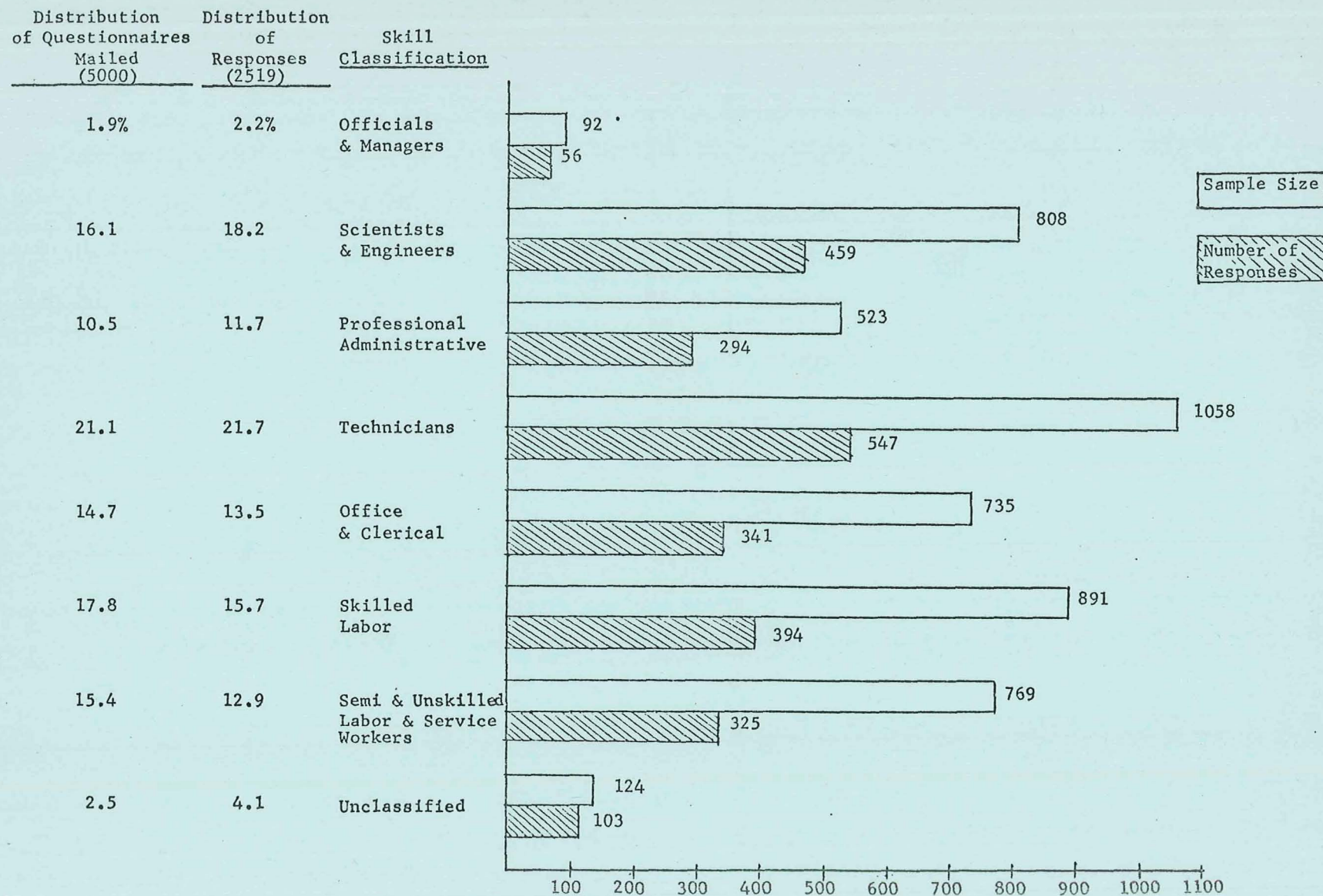


CHART B. DISTRIBUTION OF SAMPLE AND RESPONSES BY SKILL CLASSIFICATION



group of skills. The distribution of returns by company and plant location (not shown) also closely paralleled the distribution for this universe. The results of the study therefore can be considered to be representative of what's happening to major NASA contractors in particular, and the whole aerospace industry in general.

In Chart C, the employment status reported by the respondents is shown. Only about one-third of the displaced workers have found what they consider to be permanent employment. Over 60 percent are unemployed or employed at what they consider to be temporary jobs. The remainder have left the work force for various reasons (retired, vacation, family responsibilities, etc.).

Chart D shows the industries in which the permanently employed respondents have found re-employment. Almost one-fourth of these have gone to other manufacturing. Another one-fourth went into trade and services (transportation, communications, utilities, wholesale and retail trade, finance, insurance, real estate and education). One-fourth went into other industries including agriculture, mining, construction, and miscellaneous fields. About 18 percent found re-employment in aerospace and 9 percent in government (Federal, State, and local).

The average length of unemployment by skill classification is shown in Chart E, and the average percent of time unemployed since layoff. The average length of unemployment is 31 weeks, and the average percent of time unemployed since layoff is 46 percent.

Chart F shows the distribution of those persons still unemployed, by skill classification, contrasted with the distribution of all respondents, by skill classification. The professional administrative, office and clerical, semiskilled labor, unskilled labor, and service workers skills have higher levels of unemployment than their representation in the returns. Technicians seem to prosper best with a significantly lower level of unemployment than their representation in the responses.

Unemployment by geographic location is shown in Chart G. The unemployment situation in California is the worst by far. While about 58 percent of the respondents were laid off from plants in California, almost 72 percent of the unemployed workers are from this area.

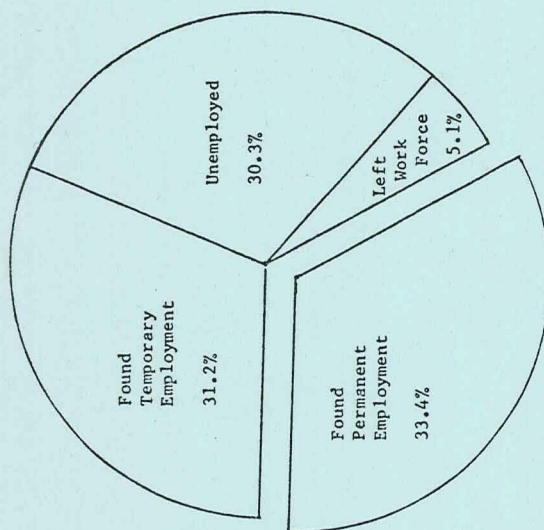


CHART C. EMPLOYMENT STATUS OF RESPONDENTS

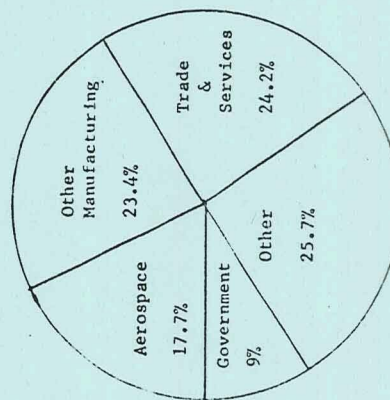


CHART D. INDUSTRIES IN WHICH RESPONDENTS FOUND PERMANENT EMPLOYMENT

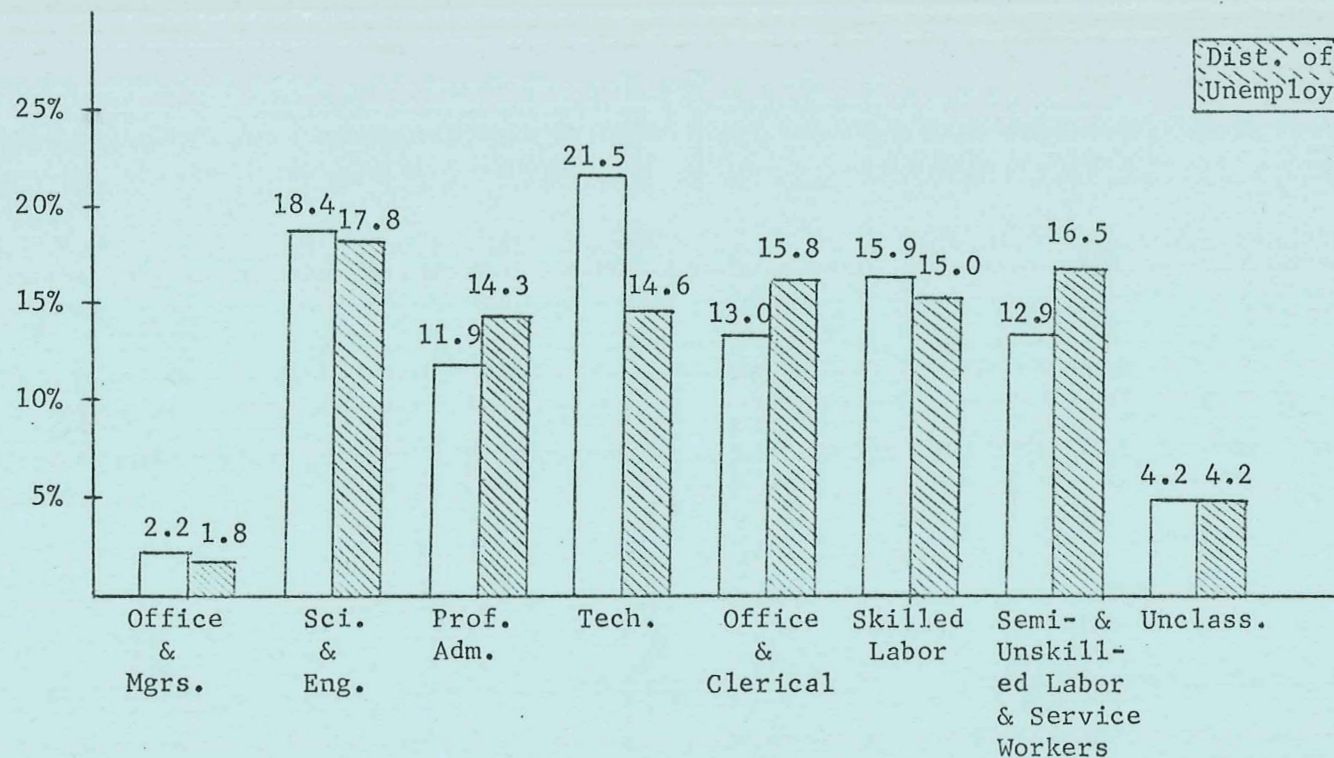
	Office Sci. Prof. & Mgrs.	Eng.	Adm.	Tech.	Office & Clerical	Skilled Labor	Semi & Unskilled Labor and Service Workers	Unclass. Total	
Average Number of Weeks Unemployed Since Layoff	31	28	29	32	40	29	34	24	31
Average Percent of Total Time Unemployed Since Layoff	46	44	51	43	55	43	47	42	46

CHART E. DURATION OF UNEMPLOYMENT AMONG SURVEY RESPONDENTS



Dist. of  
Resp. in Labor Force

Dist. of  
Unemployment



									Total
Number Unemployed	14	136	109	111	120	114	126	32	762
Number in Work Force	54	441	284	513	310	381	308	100	2391
% Unemployed in Work Force	25.9	30.8	38.4	21.6	38.7	29.9	40.9	32.0	31.9

CHART F. UNEMPLOYMENT BY SKILL CLASSIFICATION FOR THOSE STILL IN LABOR FORCE



Chart H summarizes unemployment by age. Note that the unemployment levels increase with age indicating the difficulty older persons have in gaining re-employment. Note also that the age groups of 20-24 and 25-34 years represent about 30 percent of the respondents, yet only 18 percent of the unemployed. On the other hand those persons 50 years of age and over represent only about 25 percent of the respondents but they account for over 37 percent of the unemployed.

Unemployment contrasted with educational attainment is shown in Chart I. Those respondents with no more than a high school education appear to have the most difficulty in gaining re-employment. While they represent about 44 percent of the respondents, they account for 50 percent of the unemployed.

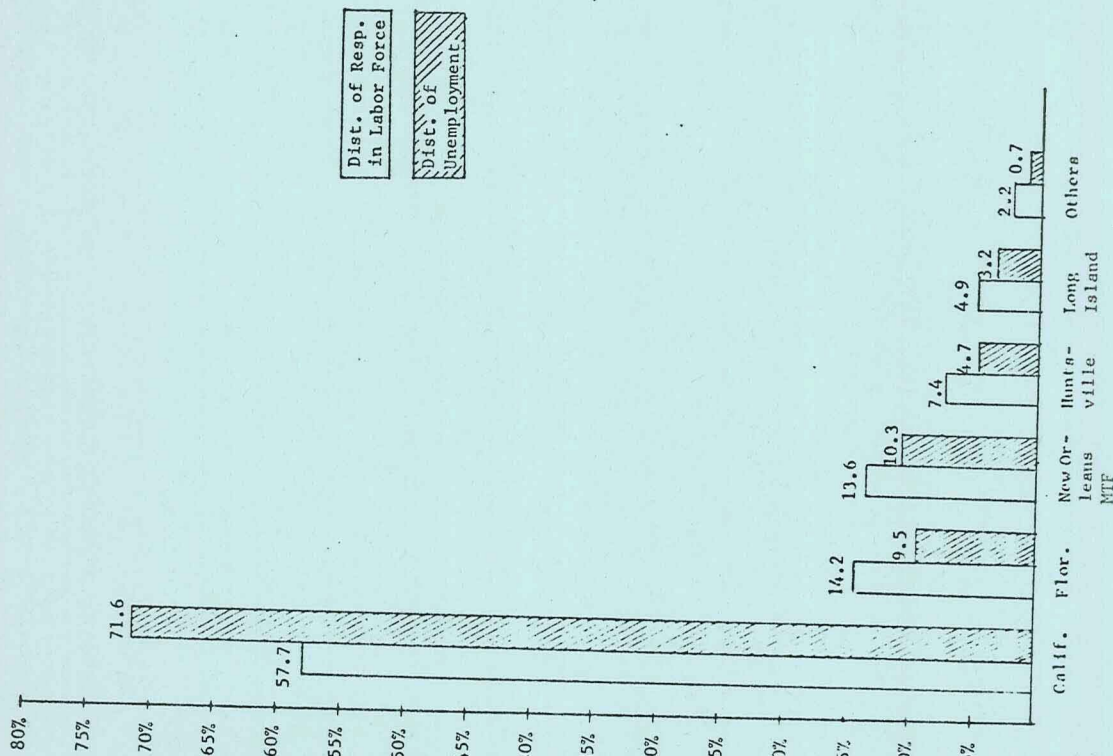
Chart J presents a comparison of present employment with employment at time of layoff. Almost 60 percent of the respondents indicated that the skills they obtained through aerospace employment are being used to some extent in their present employment. Only about 35 percent report that their present job pays as well or better than that at time of layoff. About two-thirds report that their present fringe benefits are worse.

Chart K compares job functions of present employment with job functions of employment at time of layoff. Production and support includes production workers, maintenance and support services, and office and clerical support. Administration includes administrative and sales and marketing. A large increase in the administrative job functions was due to increased employment level in sales and marketing. The large reduction in research, design, development, test and evaluation was due to a large decrease in test and evaluation job functions.

Use of aerospace skills is contrasted with present job functions in Chart L. The highest use of skills obtained through aerospace employment is being made in research design, development, test and evaluation and documentation. Almost 50 percent of the respondents with these present job functions indicate their present employment is highly related to the skills obtained through aerospace employment.

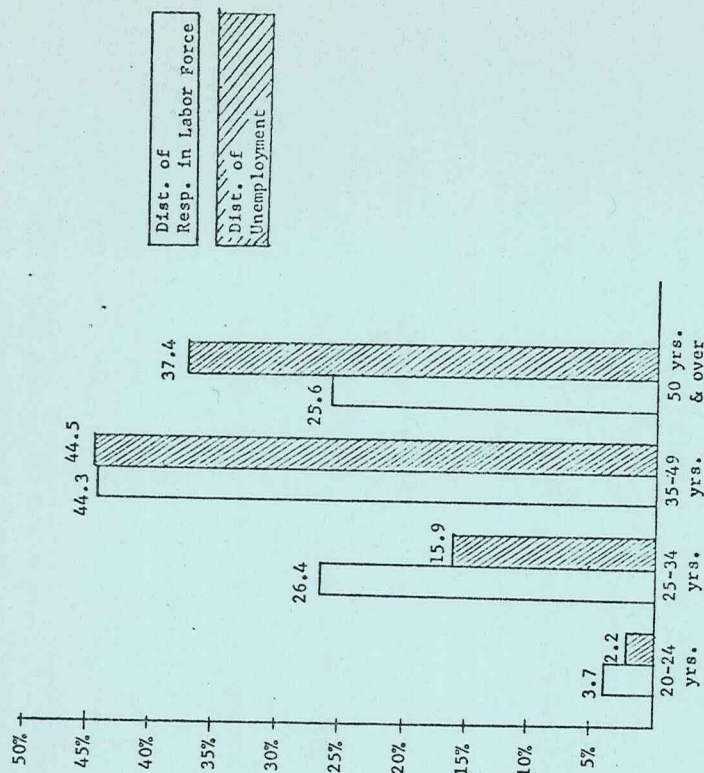
In Chart M, use of aerospace skills is contrasted with present business or industry of employment. Outside of those persons who have returned to aerospace employment, the largest use of aerospace skills is in other





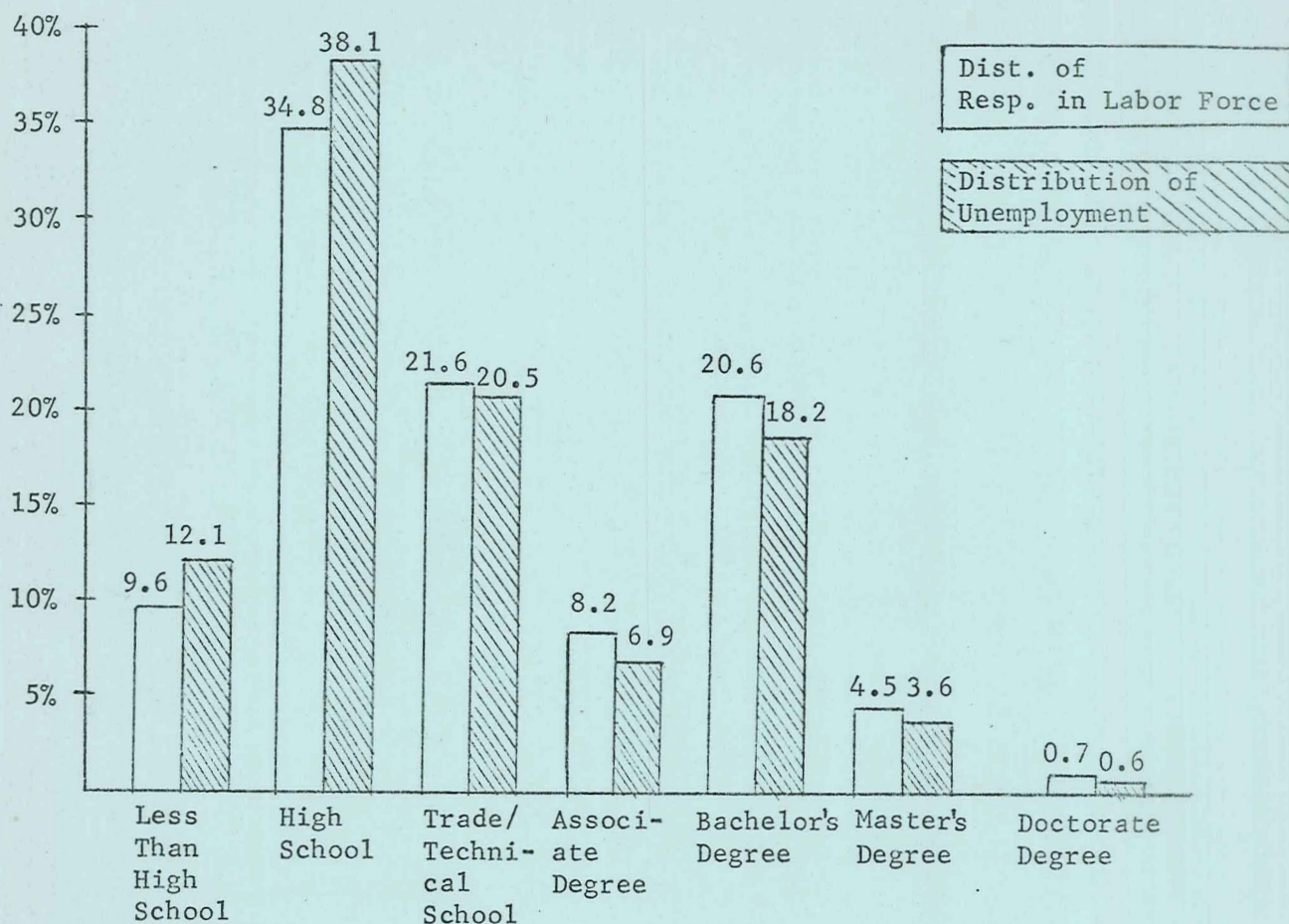
Number							Total
Unemployed	534	71	77	35	24	5	746
Number in Work Force	1350	333	319	172	115	51	2340
% Unemployed	39.6	21.3	24.1	20.3	20.9	9.8	31.9

CHART G. UNEMPLOYMENT BY GEOGRAPHIC LOCATION FOR THOSE STILL IN LABOR FORCE



Number Unemployed				Total
No. Still in Work Force	16	118	330	742
% Unemployed in Work Force	87	615	1034	2333
	18.4	19.2	31.9	46.6

CHART H. UNEMPLOYMENT BY AGE FOR THOSE STILL IN LABOR FORCE



								Total
Number Unemployed	90	282	152	51	135	27	4	741
No. of Respondents Still in Labor Force	223	812	503	190	479	106	17	2330
% Unemployed	40.4	34.7	30.2	26.8	28.2	25.5	23.5	31.8

CHART I. UNEMPLOYMENT BY EDUCATIONAL ATTAINMENT  
FOR THOSE STILL IN LABOR FORCE



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Relationship of Current Employment To:	<u>Highly Related</u>	<u>Somewhat Related</u>	<u>Not Related at All</u>
Aerospace Experience	27.8%	30.4%	41.8%
Educational Skills	32.3	39.6	28.1
Other Work Experience	34.1	38.1	27.8

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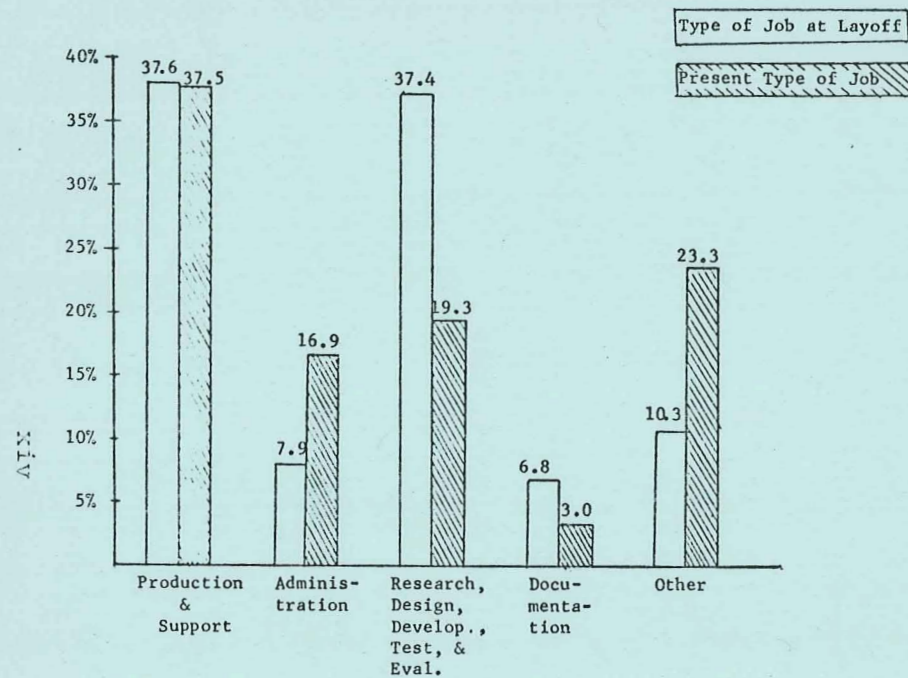
Comparison of Present Job to Job At  
Time of Layoff With Respect To:

	<u>Worse</u>	<u>Same</u>	<u>Better</u>
Pay	64.2%	15.1%	20.7%
Fringe Benefits	66.4	22.4	11.2
Working Conditions	39.2	36.7	24.1
Full Use of Skills	45.1	28.1	26.8
Job Security	32.9	28.4	38.7
Commuting Conditions	34.3	31.3	34.4

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CHART J. COMPARISON OF PRESENT EMPLOYMENT WITH EMPLOYMENT AT LAYOFF



	At Layoff	Present	Total
Production & Support	557	556	1113
Administration	117	250	367
Research, Design, Develop., Test, & Eval.	553	287	840
Documentation	101	44	145
Other	154	345	499
<b>Total</b>	<b>1482</b>	<b>1482</b>	<b>1482</b>

CHART K. COMPARISON OF JOB FUNCTIONS AT TIME OF LAYOFF AND PRESENTLY FOR THOSE WHO HAVE FOUND RE-EMPLOYMENT

Job Function	Highly Related	Somewhat Related	Not Related at All
Production & Support	28.0%	33.2%	38.8%
Administration	12.5	26.7	60.8
Research, Design, Development, Test and Evaluation	47.7	34.4	17.9
Documentation	51.1	40.0	8.9
Other	18.1	23.8	58.1

CHART L. COMPARISON OF USE OF AEROSPACE SKILLS WITH PRESENT JOB FUNCTION



manufacturing and government. Almost 70 percent of those persons in other manufacturing use their aerospace skills to some extent. About forty-five percent of those in government use their aerospace skills to some extent.

Chart N summarizes attitudes of respondents toward returning to aerospace employment. Almost 85 percent of the people who do not have permanent employment indicated that they might return to aerospace employment. Of these, almost 55 percent said they definitely would return. This latter percentage is in sharp contrast to the 14 percent of the permanently employed persons who would return to aerospace.

The estimated economic impact of the NASA cutbacks is shown in Chart O. Estimated average losses are shown by employment status. The extrapolation of these averages to total loss for the 27,171 displaced workers in the universe listing used for the study is also shown. These figures represent estimated losses for the three-year period covering 1968, 1969, and 1970. Thus the estimated Federal revenue loss of almost 48 million dollars averages to about 16 million dollars per year. The estimated average yearly State and local revenue loss is about 3.8 million dollars, resulting from State and local income tax and sales tax losses. The personal loss (resulting from lost wages/salaries, costs of job search and relocation, less government compensation and lump sum payments received, and less the reduction in taxes paid) is estimated to average almost 30 million dollars per year for the 27,171 displaced workers. Chart P shows the personal losses further detailed by the five elements comprising the estimated losses.

Chart Q summarizes data on the geographic mobility of the respondents. As expected, the major movement of persons was in the Southeast (Florida, Louisiana, Alabama) and in the Far West (California). The percentage of moves into these areas during the aerospace buildup and moves out since their layoffs remains relatively constant for the respondents.

Reservation salaries/wages for the unemployed and temporarily employed workers are contrasted with their average weekly salary/wages at the time of layoff in Chart R. Reservation salaries are the minimum that would be accepted for permanent employment. Professional skill classifications (officials and managers, scientists and engineers, and professional administrative) are willing to accept permanent jobs in their present location for the same or lower salaries than they had at time of layoff. Unemployed workers as a

<u>Business/Industry</u>	<u>Highly Related</u>	<u>Somewhat Related</u>	<u>Not Related at All</u>
Aerospace	72.0%	24.6%	3.4%
Other Manufacturing	28.2	41.2	30.6
Trade and Services	7.3	23.2	69.5
Government	20.5	24.1	55.4
Other	11.7	28.8	59.5

CHART M. COMPARISON OF USE OF AEROSPACE SKILLS WITH  
PRESENT BUSINESS OR INDUSTRY OF EMPLOYMENT

	Number of Respondents	Percent of Total Responding to Question			
		Reemployed in Aerospace	Definitely Not	Perhaps	Yes
<u>All Respondents</u>	<u>2315</u>	<u>12.4%</u>	<u>11.6%</u>	<u>35.6%</u>	<u>40.4%</u>
Those Reemployed in What They Consider to Be a Permanent Job	818	17.4	24.9	43.5	14.2
All Other Respondents	1497	9.8	4.3	31.2	54.7

CHART N. ATTITUDES OF RESPONDENTS ABOUT RETURNING TO AEROSPACE EMPLOYMENT

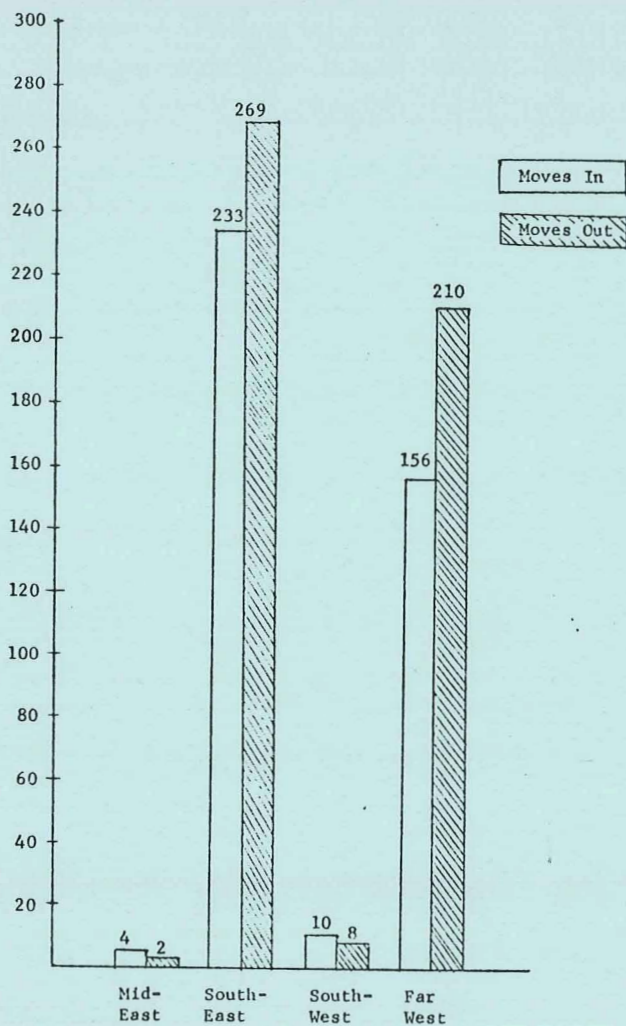


Average Loss (Survey Respondents)	Federal Revenue Loss	State & Local Revenue Loss	Personal Loss	Total
Permanently Employed	\$1177	\$263	\$2505	\$3945
Temporarily Employed	1812	420	4268	6500
Unemployed	2712	678	3632	7022
Extrapolated Total Loss (27,171 Employees)				
Permanently Employed	\$10.738M	\$2.423M	\$22.679M	\$35.840M
Temporarily Employed	15.310	3.566	36.484	55.360
Unemployed	21.896	5.501	29.849	57.246
Total	\$47.944M	\$11.490M	\$89.012M	\$148.446M

CHART O. ESTIMATED ECONOMIC IMPACT OF NASA CUTBACK

Average Loss (Survey Respondents)	Personal Losses		Personal Gains		
	Income Loss	Job Search and Relocation Costs	Savings in Tax Payments	Government Compensation	Lump Sum Payments
Permanently Employed	\$4547	\$915	\$1389	\$ 714	\$853
Temporarily Employed	7486	692	2142	1015	752
Unemployed	8572	420	3311	1350	697
Extrapolated Total Loss (27,171 Employees)					
Permanently Employed	\$41.296M	\$8.310M	\$12.615M	\$6.485M	\$7.747M
Temporarily Employed	63.549	5.874	18.183	8.616	6.384
Unemployed	71.310	3.494	27.544	11.231	5.798

CHART P. ESTIMATED PERSONAL LOSS RESULTING FROM LAYOFFS



No. of Respondents in Area	129	875	18	1418
% Respondents Moving Into Area During Buildup	3.1%	26.6%	55.6%	11.0%
% Respondents Moving Out Since Layoff	1.6%	30.7%	44.4%	14.8%

CHART Q. GEOGRAPHIC MOBILITY

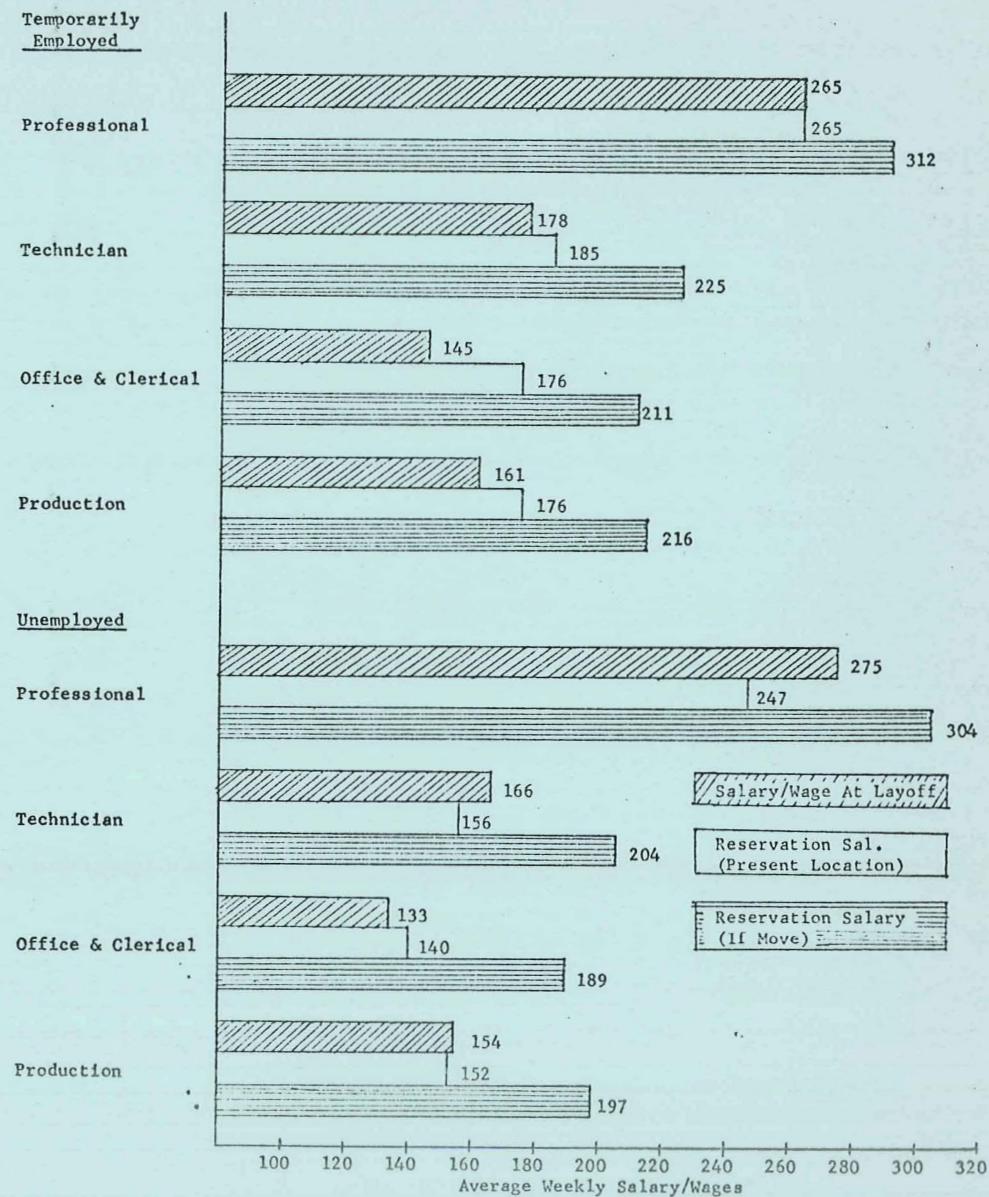


CHART R. RESERVATION SALARIES FOR THOSE WITH NO PERMANENT EMPLOYMENT



whole are willing to accept permanent employment at the same or lower salaries/wages in their present location. On the average, those respondents who would accept permanent employment at a different location would do so for a weekly salary or wage of about \$50 more than they received at the time of their layoff.

Chart S summarizes mobility characteristics of the respondents by skill classification and educational attainment. The white collar professions and those with higher educational training tend to be more mobile than the blue collar workers and those with less than a bachelor's degree in education.

Information on the methods used by the respondents in seeking employment and the effectiveness of these methods are summarized in Chart T for those respondents who have found either permanent or temporary employment. The most effective methods used were direct applications to employers, friends and relatives, and help wanted advertisements. Private and state employment agencies, though heavily used, did not appear to be effective tools at all in seeking re-employment.

Chart U summarizes factors that respondents claim caused them difficulty in gaining re-employment. The most important factor contributing to their difficulties was the fact that they felt there were no jobs available to match their training and experience. Other significant factors were that they felt that they were either too old or that the wage and salary offers were too low.

Further details of the results of this survey are presented in the main body of this report.

<u>Skill Classification</u>	<u>Percent Who Moved To Accept Job From Which Laid Off</u>	<u>Percent Who Moved Since Their Layoff</u>
Officials & Managers	52.7%	40.0%
Scientists & Engineers	45.9	32.0
Professional Administrative	28.8	27.7
Technician	31.5	35.0
Office & Clerical	14.9	21.0
Skilled Labor	24.3	20.6
Semi-, Unskilled & Service Workers	17.5	20.4
Unclassified	30.4	19.6
<u>Educational Attainment</u>		
Less Than High School	22.2	19.5
High School	22.5	24.1
Trade/Technical School	28.1	24.6
Associate Degree	26.0	29.5
Bachelor's Degree	40.3	35.3
Master's Degree	51.4	39.6
Doctorate Degree	53.0	35.3

CHART S. MOBILITY OF WORK FORCE BY SKILL AND EDUCATIONAL ATTAINMENT

<u>Methods Used to Seek Employment</u>	<u>Not Available</u>	<u>Did Not Use</u>	<u>Used and Found Helpful</u>	<u>Used But Did Not Find Helpful</u>
Assistance from Company from Which Laid Off	59.3%	18.0%	4.7%	18.0%
Labor Unions	63.5	32.2	1.7	2.6
Professional/Trade Organizations	45.9	42.2	3.2	8.7
Private Employment Agencies	4.0	47.8	10.4	37.8
State Employment Agencies	3.5	32.0	6.0	58.5
Friends and Relatives	5.6	27.2	44.0	23.2
Help Wanted Advertisements	2.6	19.4	28.3	49.7
Direct Application to Employers	1.4	6.8	51.2	40.6

CHART T. USEFULNESS OF METHODS USED TO SEEK EMPLOYMENT  
(For Those Who Found Employment)



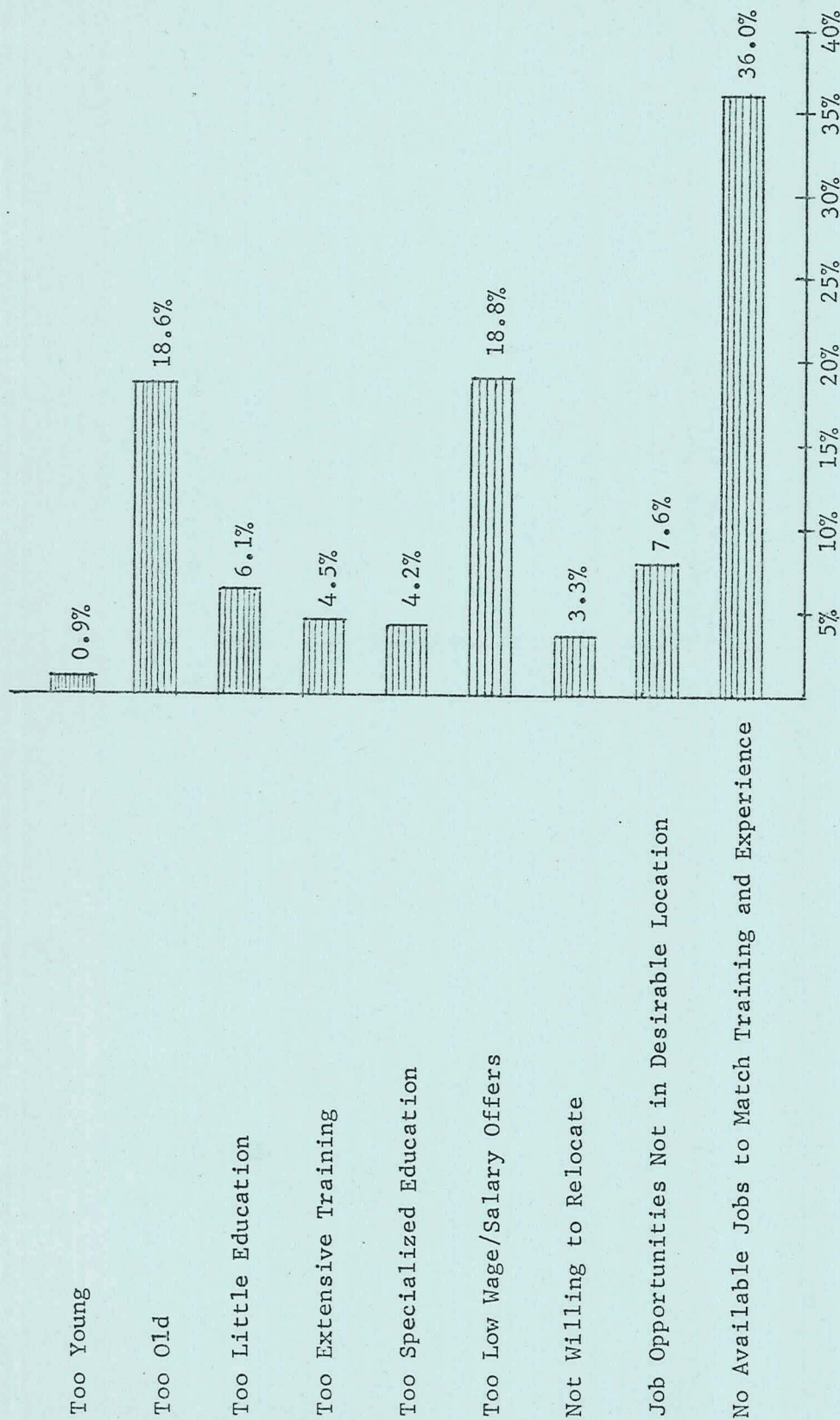


CHART U. REASONS FOR DIFFICULTY IN FINDING RE-EMPLOYMENT  
(For Those Still Unemployed)

FINAL REPORT  
on  
A SURVEY OF AEROSPACE EMPLOYEES AFFECTED  
BY REDUCTIONS IN NASA CONTRACTS  
to  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
from  
BATTELLE  
Columbus Laboratories  
May 20, 1971

INTRODUCTION

Since Fiscal Year 1966, total NASA expenditures have decreased from a peak annual rate of \$5.933 billion to the current rate of \$3.268 billion in Fiscal Year 1971. Total agency expenditures are projected to decrease by an additional \$217 million to \$3.151 billion during the coming fiscal year. Over the six year period, Fiscal Year 1966 - Fiscal Year 1972, total agency expenditures have thus been reduced by 42 percent (in current dollars). When the effects of inflation are taken into account, the reduction in total resources available to NASA is even more substantial. Based on an estimated average annual increase of 6.6 percent in the costs of agency purchases since Fiscal Year 1966, the net reduction in real agency resources amounts to nearly 64 percent. No other functional area in the Federal Budget has been reduced by a comparable amount.

Total employment generated by the space program has declined in proportion to the reductions in NASA constant dollar expenditures. Since the peak NASA employment level, established in early 1966, NASA employment has shown a sharp decline. Estimated total employment on NASA programs in early 1966 was 420,000. The comparable figure in June, 1971 is 138,000. At the peak of the program, thousands of firms were performing work under NASA prime and subcontracts. At that point in time, the space program drew resources from a wide industrial base. The contraction of NASA



expenditures since Fiscal Year 1966 has involved significant changes in the composition of total agency resources. The most important point in terms of present economic conditions is that while the early reductions in NASA expenditures and employment were diffused throughout the economy, more recent reductions have been concentrated in terms of companies, localities, and industries. As these employment reductions have become more sharply focused, the problems of absorbing workers displaced by the cutback have become increasingly more difficult. The absorption problem has been compounded by the concurrent cutbacks in defense programs and the slowing down of the general economy.

The economic effects of the NASA cutback on companies and individuals have varied significantly with the timing of the reductions. As a general rule, the early cutbacks (June, 1966 - June, 1968) were absorbed relatively easily--frequently contractors were able to offset the NASA reductions by transferring displaced workers to DOD or commercial programs within the same plant. Even where such in-plant shifts were not possible, it is likely that displaced workers could have found comparable employment elsewhere given the bouyancy of the aerospace industry and the general economy during this period.

Beginning in mid-1968, the employment situation changed drastically. Whereas in the earlier years of the NASA contraction (Fiscal Year 1966 - Fiscal Year 1968), NASA contractors had on the average been able to "absorb" more than half the NASA-related employment reductions within the same plants on other company business; in Fiscal Year 1969 the proportion of NASA employment reductions so-absorbed decreased to less than one-fourth. By Fiscal Year 1970 the proportion had decreased to about 15 percent; in the first half of Fiscal Year 1971 it declined to only 3 percent. The displacement problem for NASA contractor employees was aggravated in Fiscal Year 1970 because of an increase in the employment reductions on NASA programs during this period.

As an initial attempt to collect information on workers displaced as a result of cutbacks in NASA programs, NASA contacted various persons in the Office of Management and Budget, the National Aeronautics and Space Council, the National Science Foundation, and the Department of

Labor. These contacts indicated that not enough was known about the short-term adjustments in the labor market for technical personnel. NASA also contacted the Aerospace Industries Association and some of the agency's major contractors in the aerospace industry. Short questionnaires were sent to nine major contractors requesting information on how these companies had achieved major NASA employment reductions (i.e., the extent to which they were able to "absorb" reductions within the company and the extent of the actual layoffs resulting from the NASA cutback). The results of any follow-up questionnaires that the companies may have sent on their own initiative to laid-off workers were also requested.

From this preliminary survey, NASA obtained usable employment data (by skill level) from 8 companies representing 30 separate establishments. In addition, most of these companies were able to provide mailing lists of workers laid off due to NASA contract reductions. These mailing lists were used in the NASA/Battelle survey.

The most important findings of this preliminary NASA survey follow:

- (1) There were 40,000 actual layoffs resulting from NASA cutbacks at the 30 survey establishments between June, 1966 and June, 1970. Of this total, 17,400 occurred during Fiscal Year 1970.
- (2) Over the whole period 1966-1970, the ratio of layoffs to total NASA-related employment reductions was .70. During Fiscal Year 1970, this ratio rose to .97.
- (3) Projected layoffs during Fiscal Year 1971 will be only about one-half as large as those experienced during Fiscal Year 1970. The skill-mix of the Fiscal Year 1971 reductions will, however, be much higher. During Fiscal Year 1970, 36.7 percent of total employment reductions were in the professional categories (officials and managers, scientists and engineers, and professional administrative); in Fiscal Year 1971, this proportion will increase to 49.2 percent.



- (4) Several contractors who had such information reported that as many as one-half of their displaced workers were presently unemployed.

It is against this background that NASA determined to conduct a survey of workers displaced as a result of the cutback in its programs. The agency is concerned that the technical resources built up at great cost to the nation during the 1960's will now be dissipated or grossly underutilized. As a result, NASA contracted with Battelle to conduct a survey of aerospace employees affected by reductions in NASA program funding. This report presents the results of that survey.

PURPOSE OF THE STUDY

The purpose of this study was to collect basic data on aerospace employees affected by the cutback in NASA program funding. Data was collected by conducting a mail survey of such individuals. More specifically, the survey was directed toward collecting data for the following areas of interest:

- (1) The rate and duration of unemployment among displaced aerospace workers
- (2) The extent of underemployment among those workers who had found reemployment as evidenced by changes in occupational levels and/or salary levels
- (3) Differential patterns of unemployment and underemployment among various skill groups
- (4) Losses to Federal and State budgets resulting from unemployment
- (5) The extent of geographic and occupational mobility among displaced workers.

Such factual information should add considerably to rational planning not only for NASA programs, but for the whole Research and Development sector.



# METHODOLOGY AND CONDUCT OF THE STUDY

The study program and methodology can be divided into two phases. The first phase is the actual conduct of the survey, while the second phase is concerned with the processing of the data collected.

An initial step in the survey was the specification of the universe to be sampled. This step was accomplished by NASA through a preliminary survey of 9 NASA contractors contacted by the Agency in September, 1970. The preliminary survey was directed to a selected group of contractors who were known to have been affected by the cutback in NASA programs. The following screening procedure was used by NASA to assure that the contractors selected for the survey would include the most significant NASA-induced contractor layoffs.

First, all plants reporting to the NASA-DOD Economic Information System (EIS) in both 6/66 and 12/69 that had experienced a reduction of NASA employment of 100 or more over that period were identified. These 77 plants were then ranked by the absolute size of the NASA employment reduction with the following results:

<u>NASA Employment Reduction (Size Class)</u>	<u>No. of Plants</u>	<u>Total NASA Reduction (In Size Class)</u>	<u>Cumulative NASA Reduction (All Size Classes)</u>
5,000 or more	4	34,418	34,418
2,500 - 4,999	6	17,125	51,543
1,000 - 2,499	20	31,547	83,090
500 - 999	19	13,343	96,433
100 - 499	28	5,888	102,321

It was discovered that more than 90 percent of the identified NASA reductions occurred in 49 plants which had sustained NASA employment reductions of more than 500 persons.

Computer runs were then requested by NASA for the 49 plants identified in the first step. These plant reports were listed in descending order according to the size of the NASA employment reductions. Based on these plant employment reports, specific plants were selected

for the survey only if total plant employment declined significantly in relation to the NASA cutback. If total plant reductions appeared to be dominated by non-NASA reductions (i.e., DOD or commercial business), the plant was not included in the list. Several plants having missing EIS reports for 12/69 were added into the candidate group. A final selection was made on a judgmental basis designed to achieve representative geographic coverage.

As a result of this preliminary survey of major NASA contractors, the agency received employment data, by skill level, for 30 plant locations of eight companies, covering the period of the program cutback beginning in Fiscal Year 1966. In addition, NASA received mailing lists from seven contractors (covering 21 establishments) identifying individuals who had actually been laid off as a consequence of NASA contract reductions. These mailing lists are the basis for the sample survey conducted by Battelle. The companies and plant locations represented in the survey are the following:

- (1) Bendix  
Kennedy Space Center, Florida (Apollo Launch Support)  
Various locations (Manned Space Flight Network Operations)
- (2) Boeing  
New Orleans, Louisiana (SIC Stage)  
Huntsville, Alabama (Saturn V Systems Integration and GSE)  
Kennedy Space Center, Florida (Launch Operations)  
Houston, Texas (Technical Support)  
Washington, D. C. (Technical Support)
- (3) Chrysler  
Huntsville, Alabama (SIB Vehicle Integration and GSE)  
Kennedy Space Center, Florida (SIB Cape Support)  
New Orleans, Louisiana (SIB Stage)
- (4) Grumman  
Various locations (Lunar Module Manufacturing and Support)
- (5) McDonnell/Douglas  
Huntington Beach, California (SIVB Stage, Delta)  
Sacramento, California (Stage Testing - SIVB Stage)  
Santa Monica, California (Program Support)



Florida Test Center (Launch Operations)

Vandenberg Test Center, California (Launch Operations)

(6) North American Rockwell

Downey/Seal Beach, California (CSM, SII Stage)

MTF, Mississippi (Static Testing - SII Stage)

Kennedy Space Center, Florida (Launch Operations)

Canoga Park, California (F-1 and J-2 Engines)

(7) R.C.A.

Princeton, New Jersey (TIROS and NIMBUS)

The universe specification was defined to include all persons at each plant location said off as a result of reductions in NASA funding between June, 1968 and October, 1970. (McDonnell/Douglas and Grumman were unable to provide complete listings of NASA-related layoffs but did provide partial listings that were included in the universe listing.)

There were 27,171 individuals in the universe listing which contains the following information:

- (1) Full name
- (2) Social security number
- (3) Date of layoff (month/date/year)
- (4) Base weekly salary at time of layoff
- (5) Skill classification
- (6) Length of service with company (years)
- (7) Last known address
- (8) Permanent address or forwarding address if different from (7).

A skill classification of displaced workers was requested according to the following categories:

White Collar Occupations

- (1) Officials and managers
- (2) Scientists and engineers
- (3) Professional administrative
- (4) Technicians
- (5) Office and clerical

Blue Collar Occupations

- (6) Skilled labor
- (7) Semiskilled labor
- (8) Unskilled labor
- (9) Service workers

In some cases, a less detailed classification by skills was provided with several categories combined.

The sampling frame was structured according to the data provided by the universe listing. The universe listing was transferred to a magnetic tape file and the data were stratified. In addition to stratifying individuals by the company and plant location from which they were laid off, they were also stratified according to their skill classification and ordered by date of layoff within the stratification matrix.

A systematic sample was taken from the universe listing by selecting a first sampling unit randomly and then selecting subsequent units in a regular pattern. This procedure is probably the most widely known selection procedure. It is commonly used and simple to apply. Besides being easy to apply, the advantages of systematic sampling are that it is practically foolproof, as far as computer processing is concerned; it yields a proportional sample when applied to a listing that has been grouped according to some classification scheme and it assures an adequate representation of such an ordered universe listing. It also reflects whatever stratification exists in an ordered universe listing.

Using the systematic sampling procedures, a sample of 5,000 individuals was selected from the 27,171 individuals in the universe listing.

A computer program was prepared to select the sample for the survey. An initial randomly selected individual was read into the program, and the program selected all subsequent individuals systematically. At the time that the sample was selected, mailing labels and identification labels were printed, and a new file was started for the selected sample which served to integrate the information on the individuals from the universe listing with the information which was received from the respondents. This new file was used as the data source for analysis and was also used to



determine the response to the initial mailing, and to determine which individuals would receive follow-up questionnaires.

A detailed questionnaire was developed for the survey, based upon discussions with representatives from Battelle, NASA, the Office of Management and Budget, the Bureau of Labor Statistics, and the National Science Foundation. The initial questionnaire and the follow-up letter are shown in the Appendix.

The questionnaire was mailed to the initial sample of 5000 individuals and a follow-up letter and questionnaire were mailed to nonrespondents four weeks later. The initial mailing resulted in 2017 returns and the follow-up mailing yielded an additional 502 returns. Questionnaires returned as nondeliverable numbered 318. Follow-up returns still continue to arrive although they cannot be processed in time to be used in this report. Of the 4682 questionnaires which can be assumed to have reached their destination, the 2519 returns processed for this report represent a response rate of 53.8 percent.

The questionnaire had been designed so that the returns could be keypunched directly, eliminating the intermediate step of coding data. A computer program was prepared to perform preliminary edits of the data. This edit routine was limited to logical checks of responses to particular questionnaire items. After the data were edited, they were added to the data file. Follow-up responses were coded so that they could be distinguished from responses to the first mailing in the data file.

Data were processed using specially prepared programs for data tabulation and also using BMD02S, one of the series of BIMD\* programs, which analyzes data through a contingency table analysis.

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\* Biomedical Computer Programs, W. J. Dixon, Editor, University of California, Los Angeles, September, 1965, p. 341.

## CHARACTERISTICS OF THE SURVEY SUBJECTS

The following discussions are presented to provide further information concerning the distribution of aerospace employees affected by cutbacks in NASA program funding. This information is provided at four levels of detail so that comparisons can be drawn for each. The four levels of detail provide information on the characteristics of the survey population from which the sample was drawn, of the survey sample itself, of the respondents to the first mailing, and of the respondents to the follow-up mailing.

### Survey Population

Table 1 presents a summary of the coverage provided by the 21 plants included in the survey. These contractor plants account for one-fourth to one-third of total NASA contractor employment over the period of interest. Note, however, that these plants account for 38 percent of the decrease in NASA contractor employment during the period June, 1968 to December, 1969. Moreover, they account for 73 percent of the NASA contractor employment reductions that were concentrated in plants with large (over 500) NASA employment reductions. These statistics show that the plant selection procedure, described in the previous section, did in fact bring into sharp focus those contractor plants that have sustained major employment reductions as a result of the cutback in NASA programs. The data obtained from this survey can, therefore, be considered as being representative of the work force experiences of impacted NASA contractors.

Table 2 summarizes the information collected as part of the universe listing for length of service with company and for base weekly salary at time of layoff.

The distribution of the entire universe listing according to plant location, company, and skill classification is presented in Table 3. The skill classification code follows the numbering system presented in

TABLE 1. COVERAGE INFORMATION: 21 PLANTS  
INCLUDED IN SURVEY

	TOTAL NASA EMPLOYMENT			TOTAL PLANT EMPLOYMENT			EMPLOYMENT CHANGE			
	6/66	6/68	12/69	6/66	6/68	12/69	6/66-6/68		6/66-12/69	
							NASA	Plant	NASA	Plant
Estimated Total Contractor Employment on NASA Programs	360,000	235,400	161,000	Not Available			-124,600	NA	-74,400	NA
49 EIS Plants with NASA Employment Reductions Greater than 500, 6/66-12/69	148,271	90,125	51,838	439,525	450,444	370,802	-58,146	-10,919	-38,287	-79,642
21 Survey Plants	90,335	75,759	47,774	123,072	117,087	81,436	-14,576	-5,985	-27,985	-35,651
Percentage Coverage of 21 Survey Plants in Relation to:										
NASA Contractor Employment	25.1	32.2	29.7	Not Available			11.7	NA	37.6	NA
49 Plants with Large NASA Reductions	60.9	84.0	92.2	28.0	26.0	22.0	25.1	54.8	73.1	44.8



TABLE 2. AVERAGE YEARS OF SERVICE AND BASE WEEKLY SALARIES FOR THE UNIVERSE LISTING

Company	Number of Layoffs	Average Years of Service	Average Weekly Salary
1. Bendix	896	2.54	\$177
2. Boeing	5,864	4.76	181
3. Chrysler	2,163	5.84	196
4. Grumman	1,319	3.33	169
5. McDonnell/Douglas	268	6.57	193
6. North American Rockwell	16,621	8.49	185
7. RCA	40	5.76	247
TOTAL	27,171	7.00	\$184

the preceding section of this report. The zero classification is for those individuals who had no skill classification reported in the universe listing.

About 61 percent of the individuals laid off were employed by North American Rockwell. Slightly more than 21 percent were laid off from Boeing, followed by Chrysler with about 8 percent of the total, and Grumman with about 5 percent. The remaining 5 percent of the individuals were laid off from Bendix, McDonnell/Douglas, and RCA. McDonnell/Douglas supplied only a sample of names for the listing rather than their total layoffs. Grumman provided only the names of workers laid off from the Lunar module program.

The skill classification with the largest total number of layoffs is technicians, followed by skilled labor, scientists and engineers, semi-skilled labor, office and clerical, professional and administrative, and the other skill classifications contributing the remaining 5 percent.

TABLE 3. DISTRIBUTION OF ENTIRE UNIVERSE LISTING  
BY SKILL, COMPANY, AND LOCATION

Company	Skill									
	Off. & Uncl.	Mgrs.	S&E's	Prof. Adm.	Tech.	Off. & Cler.	Skilled Labor	Semi- Skilled Labor	Un- Skilled Labor	Serv. Wrkrs.
	0	1	2	3	4	5	6	7	8	9
1. Bendix										
Various		10	43	17	48	148	3	6	14	289
KSC		3	89	93	141	114	159	8		607
Subtotal (1)		13	132	110	189	262	162	14	14	896
2. Boeing										
New Orleans		52	365	39	1,034		813			2,303
Huntsville		27	300	31	776		253			1,387
KSC		47	455	51	1,009		323			1,885
Houston		12	113	8	94					227
D. C.		10	19	4	29					62
Subtotal (2)		148	1,252	133	2,942		1,389			5,864
3. Chrysler										
Huntsville		40	225	22	203	130				620
KSC		9	163	41	290	112				615
New Orleans	1	74	261	41	88	255	49	104	54	928
Subtotal (3)	1	123	649	104	581	497	49	104	54	2,163
4. Grumman										
Various	64	20	322	57	290	103	455	1		1,319
5. McDonnell/Douglas										
Huntington Beach		8	10	8	9	10	10		5	60
Sacramento		3	10	10	9	10	10	10		62
Santa Monica	4		10	2	10	10	10		26	72
F.T.C.		3	10	10	10	10	10			58
V.T.C.			8				8			16
Subtotal (5)	4	14	48	30	38	40	48	10	31	268
6. North American										
Rockwell										
Downey/Seal Beach	279	94	1,234	1,626	1,040	2,050	1,667	2,567		10,557
MTF	1	3	11	8	6	21	8	7		65
KSC		10	131	96	131	169	149	103		789
Canoga Park	327	77	583	683	514	853	911	1,260	2	5,210
Subtotal (6)	607	184	1,959	2,413	1,691	3,093	2,735	3,937	2	16,621
7. RCA										
Princeton		2	14	13	8	3				40
GRAND TOTAL	676	504	4,376	2,860	5,739	3,998	4,338	4,066	101	27,171
Percentages	2.5	1.9	16.1	10.5	21.1	14.7	17.8	15.0	0.4	100.0

### Survey Sample

The distribution of the sample according to the stratification variables is shown in Table 4. Note that the percentage distribution by skill classification is the same as shown for the universe. This results from taking a systematic sample from the ordered, stratified universe. The same distribution holds by plant location and company also.

### Respondents to First Mailing

Table 5 summarizes the distribution of the 2017 responses to the first mailing according to skill classifications of the respondents. Note that the distribution of the total response by skill classification closely parallels the distribution of the questionnaires mailed to each skill classification. This very desirable result indicates that the responses received are not strongly biased toward any particular subset of skill classifications. The last line of this table shows the response rate for each skill classification, calculated as the ratio of the number of responses from that category to the number of questionnaires mailed to that classification. The lowest response rate (30.9 percent) is for the semiskilled, unskilled, and service workers category. This is a surprisingly high response rate for such workers considering the length and complexity of the questionnaire.

In Table 6, the distribution of responses from the first mailing is shown by the company and plant location from which they were laid off. (The difference in total is due to the fact that these data were extracted from a cross-tabulation of a specific variable to which 36 of the respondents did not reply.) Again note how closely the distribution of responses parallels the distribution of mailed questionnaires to each location.

From these two tables it can be concluded that the responses to the first mailing are representative of the sample and universe in terms of the stratification variables.



TABLE 4. DISTRIBUTION OF SAMPLE BY SKILL,  
COMPANY, AND LOCATION

Company	Skill									
	Off. & Uncl.	Mgrs.	S&E's	Prof. Adm.	Tech.	Off. & Cler.	Skilled Labor	Semi- Labor	Un- Skilled Labor	Serv. Wrkrs.
	0	1	2	3	4	5	6	7	8	9
1. Bendix										
Various		2	7	2	10	27	1	1	3	53
KSC		1	16	17	26	21	29	2		112
Subtotal (1)		3	23	19	36	48	30	3	3	165
2. Boeing										
New Orleans		9	68	7	190		150			424
Huntsville		5	55	6	142		47			255
KSC		9	83	10	185		60			347
Houston		2	21	1	18					42
D. C.		1	4	1	5					11
Subtotal (2)		26	231	25	540		257			1,079
3. Chrysler										
Huntsville		7	42	4	37	24				114
KSC		2	30	7	54	20				113
New Orleans		14	48	8	16	47	9	19	10	171
Subtotal (3)		23	120	19	107	91	9	19	10	398
4. Grumman										
Various	12	3	60	10	54	19	83			243
5. McDonnell/Douglas										
Huntington Beach		1	2	2	1	2	2		1	11
Sacramento			2	2	2	2	1	2		11
Santa Monica	1		2	0	2	2	2		4	13
F.T.C.		1	2	2	2	1	2			11
V.T.C.			2				1			3
Subtotal (5)	1	2	10	6	7	7	8	2	5	49
6. North American										
Rockwell										
Downey/Seal Beach	51	18	227	299	191	378	306	472		1,942
MTF	0	1	2	1	1	4	2	1		12
KSC		2	24	17	25	31	27	19		145
Canoga Park	60	14	108	125	95	157	169	231	1	960
Subtotal (6)	111	35	361	442	312	570	504	723	1	3,059
7. RCA										
Princeton		0	3	2	2	0				7
GRAND TOTAL	124	92	808	523	1,058	735	891	747	19	5,000
Percentages	2.5	1.8	16.2	10.5	21.2	14.7	17.8	14.9	0.4	-- 100.0

TABLE 5. DISTRIBUTION OF FIRST MAILING RESPONDENTS BY SKILL AND SEX

	Offic. & Mgrs.	Sci. Engr.	Prof. & Admin.	Tech.	Office & Cleric.	Skilled Labor	Semi & Unskilled Labor & Service Workers	Unclass.	Total
Male	46	389	240	343	108	280	209	64	1,679
(% of all respondents)	(2.3)	(19.3)	(11.9)	(17.0)	(5.4)	(13.9)	(10.4)	(3.2)	(83.4)
Female	1	9	3	94	172	21	29	9	338
(% of all respondents)	(0.1)	(0.4)	(0.1)	(4.7)	(8.5)	(1.0)	(1.4)	(0.4)	(16.6)
Total	47	398	243	437	280	301	238	73	2,017
(% of all respondents)	(2.4)	(19.7)	(12.0)	(21.7)	(13.9)	(14.9)	(11.8)	(3.6)	(100.0%)
Number of Questionnaires Mailed	92	808	523	1,058	735	891	769	124	5,000
(% of total)	(1.8)	(16.2)	(10.5)	(21.1)	(14.7)	(17.8)	(15.4)	(2.5)	(100.0)
Percentage Response Rates, By Skill Group	51.1	49.2	46.5	41.3	38.1	33.8	30.9	58.9	40.3

TABLE 6. DISTRIBUTION OF RESPONDENTS TO FIRST MAILING BY COMPANY/PLANT LOCATION

Company/Plant	Number of Responses	Percent of Total Response	Number of Questionnaires Mailed	Percent of Total Questionnaires
Bendix	<u>55</u>	<u>2.8</u>	<u>165</u>	<u>3.3</u>
Various	19	1.0	53	1.1
KSC	36	1.8	112	2.2
Boeing	<u>457</u>	<u>23.1</u>	<u>1,079</u>	<u>21.5</u>
New Orleans	190	9.6	424	8.5
Huntsville	92	4.6	255	5.1
KSC	153	7.7	347	6.9
Houston	15	0.8	42	0.8
Washington, D. C.	7	0.4	11	0.2
Chrysler	<u>168</u>	<u>8.5</u>	<u>398</u>	<u>8.0</u>
Huntsville	51	2.6	114	2.3
KSC	42	2.1	113	2.3
New Orleans	75	3.8	171	3.4
Grumman	<u>88</u>	<u>4.4</u>	<u>243</u>	<u>4.9</u>
Various	88	4.4	243	4.9
McDonnell/Douglas	<u>20</u>	<u>1.0</u>	<u>49</u>	<u>1.0</u>
Huntington Beach	6	0.3	11	0.2
Sacramento	8	0.4	11	0.2
Santa Monica	1	0.05	13	0.3
F.T.C.	4	0.2	11	0.2
V.T.C.	1	0.05	3	0.1
North American Rockwell	<u>1,191</u>	<u>60.1</u>	<u>3,059</u>	<u>61.2</u>
Downey/Seal Beach	722	36.4	1,942	38.9
MTF	5	0.3	12	0.2
KSC	57	2.9	145	2.9
Canoga Park	407	20.5	960	19.2
RCA	<u>2</u>	<u>0.1</u>	<u>7</u>	<u>0.1</u>
Princeton	2	0.1	7	0.1
Total	1,981	100.0	5,000	100.0



Respondents to Follow-up Mailing

Tables 7 and 8 offer similar distributions of the responses to the follow-up mailing. Attention is once again called to the fact that the distribution of responses to the follow-up closely follow the distribution of mailed questionnaires, for the two stratification variables, skill classification and company/plant locations. Again it can be concluded that the responses to the follow-up mailing are representative of the sample as measured by these criteria.

TABLE 7. DISTRIBUTION OF FOLLOW-UP MAILING RESPONDENTS BY SKILL AND SEX

	<u>Offic. &amp; Mgrs.</u>	<u>Sci. &amp; Engr.</u>	<u>Prof. &amp; Admin.</u>	<u>Tech.</u>	<u>Office &amp; Cleric</u>	<u>Skilled Labor</u>	<u>Semi &amp; Unskilled Labor &amp; Service Workers</u>	<u>Unclass.</u>	<u>Total</u>
Male	9	60	51	85	31	86	73	27	422
(% of all respondents)	(1.8)	(12.0)	(10.2)	(16.9)	(6.2)	(17.0)	(14.5)	(5.4)	(84.0)
Female	0	1	0	25	30	7	14	3	80
(% of all respondents)	(0.0)	(0.2)	(0.0)	(5.0)	(6.0)	(1.4)	(2.8)	(0.6)	(16.0)
Total	9	61	51	110	61	93	87	30	502
(% of all respondents)	(1.8)	(12.2)	(10.2)	(21.9)	(21.2)	(18.4)	(17.3)	(6.0)	(100.0)
Number of Questionnaires Mailed	92	808	523	1058	735	891	769	124	5000
(% of Total)	(1.8)	(16.2)	(10.5)	(21.1)	(14.7)	(17.8)	(15.4)	(2.5)	(100.0)
Percentage Response Rates by Skill	9.8	7.5	9.8	10.4	8.3	10.4	11.3	24.2	10.0

TABLE 8. DISTRIBUTION OF RESPONDENTS TO FOLLOW-UP MAILING, BY COMPANY/PLANT LOCATION

Company/Plant	Number of Responses	Percent of Total Response	Number of Questionnaires Mailed	Percent of Total Questionnaires
Bendix	<u>18</u>	<u>3.7</u>	<u>165</u>	<u>3.3</u>
Various	<u>6</u>	<u>1.2</u>	<u>53</u>	<u>1.1</u>
KSC	12	2.5	112	2.2
Boeing	<u>110</u>	<u>22.7</u>	<u>1079</u>	<u>21.5</u>
New Orleans	<u>53</u>	<u>11.0</u>	<u>424</u>	<u>8.5</u>
Huntsville	25	5.2	255	5.1
KSC	28	5.7	347	6.9
Houston	3	0.6	42	0.8
Washington, D. C.	1	0.2	11	0.2
Chrysler	<u>41</u>	<u>8.5</u>	<u>398</u>	<u>8.0</u>
Huntsville	<u>12</u>	<u>2.5</u>	<u>114</u>	<u>2.3</u>
KSC	13	2.7	113	2.3
New Orleans	16	3.3	171	3.4
Grumman	<u>30</u>	<u>6.2</u>	<u>243</u>	<u>4.9</u>
Various	<u>30</u>	<u>6.2</u>	<u>243</u>	<u>4.9</u>
McDonnell/Douglas	<u>3</u>	<u>0.6</u>	<u>49</u>	<u>1.0</u>
Huntington Beach	<u>1</u>	<u>0.2</u>	<u>11</u>	<u>0.2</u>
Sacramento	0	0.0	11	0.2
Santa Monica	2	0.4	13	0.3
F.T.C.	0	0.0	11	0.2
V.T.C.	0	0.0	3	0.1
North American				
Rockwell	<u>281</u>	<u>58.1</u>	<u>3059</u>	<u>61.2</u>
Downey/Seal Beach	<u>178</u>	<u>36.8</u>	<u>1942</u>	<u>38.9</u>
MTF	2	0.4	12	0.2
KSC	9	1.9	145	2.9
Canoga Park	92	19.0	960	19.2
RCA	<u>1</u>	<u>0.2</u>	<u>7</u>	<u>0.1</u>
Princeton	<u>1</u>	<u>0.2</u>	<u>7</u>	<u>0.1</u>
Total	484	100.0	5000	100.0



### ANALYSIS OF SURVEY DATA

The following sections present the summarization of the data collected for the survey. The summaries are presented in the form of tabulations of the data for each of five major areas of interest:

- (1) Extent and Duration of Unemployment
- (2) Utilization of Aerospace Skills
- (3) Economic Impact
- (4) Relocation Experiences/Mobility
- (5) Job Search and Assistance.

In most cases, the tabulations were constructed to distinguish the responses received as a result of the first mailing from the responses received from the follow-up mailing. This allows a visual comparison of the two groups of respondents for differences that may be present. Also any extrapolation of the data to the universe can include both sets of responses.

The total number of respondents differ for the various tabulations. The reasons for these differences are primarily due to the fact that some of the questions were directed to subsets of the sample (for example, only those persons who are currently employed) as well as to the fact that some of the respondents might not have answered a particular question. In the case of cross-tabulations, they may not have responded to one of the two variables cross-tabulated, or to both of them. In such cases, they were not included in the tabulations. The tabulations present averages (such as average number of weeks unemployed, or average dollars of revenue loss), frequency counts, and percentages (usually enclosed in parentheses) for the cells of the tables.

#### Extent and Duration of Unemployment

The following tables summarize the data collected from the survey pertaining to the extent and duration of unemployment. The tables present information on the current employment status of the laid off aerospace employees and length of unemployment, cross-tabulated by factors such as period of layoff, plant location from which laid off, educational attainment, age, and family responsibility. The tables also present information on the

types of industries or businesses in which the individuals found re-employment, present salary levels, attitudes about the aerospace industry, and economic situation as measured by reservation salaries.

Looking first at the employment status, Table 9 shows that only one-third of the respondents have been able to find employment which they consider permanent. Another one-third have found employment which they consider temporary. Thirty percent of the persons are still unemployed. The highest rates of unemployment are among the professional and administration personnel, the office and clerical workers, and the semiskilled, unskilled and service workers. The most successful skill as far as reemployment is concerned is the technicians.

Average length of unemployment and average percent of time unemployed since layoff are shown in Table 10. On the average, the length of unemployment was about 31 weeks. Office and clerical workers experienced the longest periods of unemployment, averaging 40 weeks. In terms of percent of time unemployed since layoff, office and clerical workers, professional and administrative personnel, semiskilled, unskilled, and service workers have the highest averages.

Table 11 shows the average length of unemployment, and cell frequencies, by employment status, cross-tabulated with period of layoff. The average length of unemployment for those persons who found permanent jobs was about 20 weeks; for those who found temporary jobs, about 30 weeks; and for those who are currently unemployed, slightly more than 40 weeks. As would be expected the average length of unemployment decreases as the time since layoff decreases.

Table 12 shows average length of unemployment by employment status versus location of plant from which laid off. Also presented are the percentage distributions of employment status for each location, based on a total response of 2340 persons. The highest rate of unemployment is in California with an unemployment rate among the respondents of almost 40 percent. The Cape area of Florida and Alabama each have an unemployment rate of slightly more than 20 percent, while Louisiana has a rate of almost 25 percent. The miscellaneous locations, taken together, exhibit an unemployment rate of under 20 percent.

TABLE 9. CURRENT EMPLOYMENT STATUS OF RESPONDENTS

	Offic. & Mgrs.	Sci.. & Engrs.	Prof. & Admin.	Tech.	Office & Clerical	Skilled Labor	Semi- & Unskilled Labor and Service Workers	Unclass.	Total
<u>Number of Respondents</u>	<u>56</u>	<u>459</u>	<u>294</u>	<u>547</u>	<u>341</u>	<u>394</u>	<u>325</u>	<u>103</u>	<u>2519</u>
Permanent Job	28	179	89	194	113	121	84	34	842
Temporary Job	12	126	86	208	77	146	98	34	787
Unemployed	14	136	109	111	120	114	126	32	762
Out of Work Force	2	18	10	34	31	13	17	3	128
<u>% of All Respondents</u>									
<u>In Skill Groups</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>		<u>100.0</u>
Permanent Job	50.0	39.0	30.3	35.5	33.1	30.7	25.8		33.4
Temporary Job	21.4	27.5	29.2	38.0	22.6	37.1	30.2		31.2
Unemployed	25.0	29.6	37.1	20.3	35.2	28.9	38.8		30.3
Out of Work Force	3.6	3.9	3.4	6.2	9.1	3.3	5.2		5.1

TABLE 10. DURATION OF UNEMPLOYMENT AMONG SURVEY RESPONDENTS

	Offic. & Mgrs.	Sci. & Engr.	Prof. & Admin.	Tech.	Office & Clerical	Skilled Labor	Semi & Unskilled Labor and Service Workers	Unclass.	Total
<u>Average Number of Weeks Unemployed Since Layoff</u>	<u>31</u>	<u>28</u>	<u>29</u>	<u>32</u>	<u>40</u>	<u>29</u>	<u>34</u>	<u>24</u>	<u>31</u>
<u>Percent of Total Time Unemployed Since Layoff</u>	<u>46</u>	<u>44</u>	<u>51</u>	<u>43</u>	<u>55</u>	<u>43</u>	<u>47</u>	<u>42</u>	<u>46</u>



TABLE 11. AVERAGE LENGTH OF UNEMPLOYMENT AND DISTRIBUTION, BY CURRENT EMPLOYMENT STATUS  
(WEEKS/COUNT, FOR THOSE PERSONS STILL IN THE LABOR FORCE) VS. PERIOD OF LAYOFF

Period of Layoff (Quarter/Year)	Found Permanent Employment		Found Temporary Employment		Unemployed, Seeking Work		Total		
	1st Mailing	Follow-up	1st Mailing	Follow-up	1st Mailing	Follow-up	1st Mailing	Follow-up	Total
1,2/68	13/1	39/1	0/0	0/0	0/0	0/0	13/1	39/1	26/2
3/68	25/31	21/13	30/34	24/4	70/34	48/4	42/99	27/21	39/120
4/68	25/54	34/19	35/59	37/11	58/17	58/12	34/130	42/42	36/172
1/69	29/45	23/17	34/55	90/6	55/27	87/4	37/127	47/27	39/154
2/69	20/55	20/28	37/62	23/9	57/45	55/13	37/162	30/50	35/212
3/69	26/128	23/29	34/113	37/31	58/78	46/17	37/319	34/77	36/396
4/69	21/83	13/24	32/60	25/20	47/48	47/10	31/191	24/54	29/245
1/70	17/104	10/30	25/96	23/24	44/86	54/16	28/286	25/70	27/356
2/70	17/89	31/18	29/99	30/15	38/134	34/33	29/322	32/66	30/388
3/70	7/39	2/8	29/44	33/13	31/72	27/8	24/155	23/29	24/184
4/70	8/7	13/1	22/10	15/5	18/74	12/14	18/91	13/20	17/111
Total	21/636	20/188	31/632	32/138	43/615	42/131	32/1883	30/457	32/2340

TABLE 12. AVERAGE LENGTH OF UNEMPLOYMENT AND DISTRIBUTION, BY CURRENT EMPLOYMENT STATUS  
(WEEKS/COUNT, FOR THOSE STILL IN LABOR FORCE) VERSUS LOCATION FROM WHICH  
LAID OFF

	Found Permanent Employment			Found Temporary Employment			Unemployed, Seeking Work			Total
	First Mailing	Follow- up	Total	First Mailing	Follow- up	Total	First Mailing	Follow- up	Total	
California	20 315	21 94	20 409 (30.3)	32 342	28 65	31 407 (30.1)	42 435	41 99	42 534 (39.6)	32 1350
KSC, Florida	21 103	22 26	20 129 (38.7)	29 109	49 24	33 133 (39.9)	42 63	39 8	42 71 (21.4)	30 333
Louisiana	22 100	12 29	20 129 (41.3)	26 87	27 20	26 107 (34.3)	46 62	53 14	47 76 (24.4)	29 312
Alabama	22 61	25 22	23 83 (48.3)	34 46	32 8	34 54 (31.4)	50 29	58 6	51 35 (20.3)	32 172
Other	18 57	21 17	19 74 (42.8)	31 48	28 21	30 69 (39.9)	46 26	18 4	42 30 (17.3)	27 173
Total	20 636	20 188	20 824 (35.2)	32 632	32 138	32 770 (32.9)	43 615	42 131	43 746 (31.9)	31 2340

For those persons still unemployed, the longest average periods of unemployment were experienced by persons in Alabama (51 weeks), and Louisiana (47 weeks).

The next three tables present information on the types of employment that the respondents have been able to acquire. The distribution of employment by current industry or business of employment is shown in Table 13. Twenty percent of the respondents have found reemployment in the aerospace industry; twenty-three percent in other manufacturing; twenty-three percent in trade and services (transportation, communication, utilities, wholesale and retail trade, finance, insurance, real estate, and education); eight percent in government; and the remaining twenty-six in other industries.

Tables 14 and 15 contrast the distribution of salaries of the respondents at the time of their layoff with their present salaries, for those persons who have found employment. With the exception of a few responses in the follow-up mailing, the data indicates that the salaries the employed respondents are receiving are generally lower than the salaries they received at the time of layoff.

Tables 16 through 22 summarize data on extent and duration of unemployment by various factors describing the population of respondents. In Table 16, the educational attainment of the respondents is investigated. Those respondents with no more than a high school education appear to have the most difficulty in gaining reemployment. While they represent about 44 percent of the respondents, they account for 50 percent of the unemployment. All other groups have lower unemployment rates than their percentage representation in the responses. The group that seems to be most successful in terms of gaining permanent employment are those persons with a bachelor's degree. They account for 24 percent of the persons who have found permanent employment while representing about 21 percent of the responses. By the same token, the most successful group in terms of gaining temporary employment are those persons with a Trade or Technical School Education.

Table 17 provides a further look at those respondents who have college degrees. The average length of unemployment for these persons is about 27 weeks. Those persons with their highest degrees in physical sciences other than physics, and in humanities experienced the longest



TABLE 13. DISTRIBUTION OF RESPONSES BY CURRENT EMPLOYMENT STATUS VS.  
CURRENT BUSINESS OR INDUSTRY OF EMPLOYMENT

Current Business/ Industry Of Employment	Found Permanent Employment			Found Temporary Employment			Total			Total
	1st Mailing	Follow-up	Total	1st Mailing	Follow-up	Total	1st Mailing	Follow-up	Total	Percentages
Aerospace	112	30	142	130	29	159	242	59	301	19.6
Mfg. Other Than Aero	147	40	187	133	35	168	280	75	355	23.1
Agriculture	3	1	4	5	0	5	8	1	9	0.6
Mining	0	2	2	1	0	1	1	2	3	0.2
Construction	28	6	34	37	8	45	65	14	79	5.1
Transp./Comm./Util.	54	12	66	31	5	36	85	17	102	6.7
Wholesale/Ret. Trade	50	23	73	67	9	76	117	32	149	9.7
Finance/Insur./Real Estate	29	7	36	26	6	32	55	13	68	4.4
Education	18	1	19	20	2	22	38	3	41	2.7
Fed. Gov't.	29	6	35	20	3	23	49	9	58	3.8
State Gov't.	14	1	15	10	1	11	24	2	26	1.7
Local Gov't.	17	5	22	10	3	13	27	8	35	2.3
Other	118	47	165	114	29	143	232	76	308	20.1
Total	619	181	800	604	130	734	1,223	311	1,534	100.0

TABLE 14. DISTRIBUTION OF FIRST MAILING RESPONSES BY SALARY AT TIME OF LAYOFF AND BY PRESENT SALARY

	Less Than \$100	100 -149	150 -199	200 -249	250 -299	300 -349	350 -399	400 -449	450 -499	500 & Over	Total
<b>Salary at Time of Layoff</b>											
Number	17	212	435	215	144	90	38	9	4	31	1195
Percent of Responses	(1.4)	(17.7)	(36.4)	(18.0)	(12.1)	(7.5)	(3.2)	(0.8)	(0.3)	(2.6)	(100.0)
<b>Present Salary</b>											
Number	125	350	309	203	101	60	21	3	2	21	1195
Percent of Responses	(10.5)	(29.3)	(25.8)	(17.0)	(8.4)	(5.0)	(1.8)	(0.2)	(0.2)	(1.8)	(100.0)
Change in Percentage	+9.1	+11.6	-10.6	-1.0	-3.7	-2.5	-1.4	-0.6	-0.1	-0.8	

TABLE 15. DISTRIBUTION OF FOLLOW-UP RESPONSES BY SALARY AT TIME OF LAYOFF AND BY PRESENT SALARY

	Less Than \$100	100 -149	150 -199	200 -249	250 -299	300 -349	350 -399	400 -449	400 -499	500 & Over	Total
<b>Salary at Time of Layoff</b>											
Number	3	74	122	40	33	16	3	1	1	6	299
Percent of Responses	(1.0)	(24.7)	(40.8)	(13.4)	(11.1)	(5.4)	(1.0)	(0.3)	(0.3)	(2.0)	(100.0)
<b>Present Salary</b>											
Number	31	82	95	40	26	10	4	1	2	8	299
Percent of Responses	(10.4)	(27.4)	(31.8)	(13.4)	(8.7)	(3.3)	(1.3)	(0.3)	(0.7)	(2.7)	(100.0)
Change in Percentage	+9.4	+2.7	-9.0	0.0	-2.4	-2.1	+0.3	0.0	+0.4	+0.7	

TABLE 16. AVERAGE LENGTH OF UNEMPLOYMENT AND DISTRIBUTION, BY CURRENT EMPLOYMENT STATUS  
(WEEKS/COUNT FOR THOSE STILL IN LABOR FORCE) VERSUS EDUCATIONAL ATTAINMENT

Educational Attainment	Found Permanent Employment			Found Temporary Employment			Unemployed, Seeking Work			Total Count			Total Percentages			
	1st Mailing	Follow-up	Total Count	1st Mailing	Follow-up	Total Count	1st Mailing	Follow-up	Total Count	1st Mailing	Follow-up	Total	Perm. Emp.	Temp. Emp.	Unemp.	Total
Less Than High School	17/42	14/14	56	30/60	30/17	77	39/68	31/22	90	170	53	223	6.8	10.1	12.1	9.6
High School	25/202	26/68	270	34/207	35/53	260	44/226	47/56	282	635	177	812	32.8	33.9	38.1	34.8
Trade/ Technical School	23/128	10/45	173	31/149	24/29	178	43/127	39/25	152	404	99	503	21.0	23.2	20.5	21.6
Associate Degree	18/54	42/12	66	31/61	42/12	73	51/44	55/7	51	159	31	190	8.0	9.5	6.9	8.2
Bachelor's Degree	19/155	18/43	198	27/124	34/22	146	42/119	45/16	135	398	81	479	24.1	19.1	18.2	20.6
Master's Degree	11/46	11/4	50	27/24	16/5	29	42/24	20/3	27	94	12	106	6.1	3.8	3.6	4.5
Doctorate Degree	11/8	23/2	10	68/3	0/0	3	30/4	0/0	4	15	2	17	1.2	0.4	0.6	0.7
Total	21/635	20/188	823	31/628	32/138	766	43/612	42/129	741	1875	455	2330	100.0	100.0	100.0	100.0



TABLE 17. AVERAGE LENGTH OF UNEMPLOYMENT AND DISTRIBUTION, BY CURRENT EMPLOYMENT STATUS (WEEKS/COUNT, FOR THOSE PERSONS STILL IN THE LABOR FORCE) VERSUS FIELD OF HIGHEST COLLEGE DEGREE

Field of Highest College Degree	Found Permanent Employment		Found Temporary Employment		Unemployed, Seeking Work		Total	
	1st Mailing	Follow-up	1st Mailing	Follow-up	1st Mailing	Follow-up	1st Mailing	Follow-up Total
Physics	22/8	1/3	45/4	0/0	65/2	33/2	35/14	14/5 29/19
Other Physical Sciences	13/8	0/0	53/7	27/1	55/7	0/0	39/22	27/1 38/23
Life Sciences	0/1	22/1	0/0	0/0	0/0	0/0	0/1	22/1 11/2
Social Sciences	16/7	0/0	33/3	74/2	34/13	0/0	28/23	74/2 32/25
Humanities	0/0	47/1	82/1	0/2	52/2	0/0	62/3	16/3 39/6
Math	28/7	41/2	27/5	0/0	28/5	22/1	28/17	35/3 29/20
Mech. Engineering	11/41	23/6	29/24	60/4	36/31	66/3	24/96	44/13 26/109
Aero. Engineering	25/14	11/3	23/11	82/2	34/10	26/1	27/35	37/6 28/41
Industrial Engineering	18/11	6/6	42/4	0/0	44/6	45/2	30/21	16/8 26/29
Other Engineering	13/42	17/3	21/38	16/5	43/34	0/1	25/114	15/9 24/123
Professional	82/2	4/1	15/4	0/0	39/1	0/1	38/7	2/2 30/9
Business	13/33	28/10	26/24	4/5	41/19	81/3	24/76	30/18 25/94
Other	22/35	15/9	26/26	23/3	54/17	22/1	30/78	17/13 28/91
Total	17/209	18/45	27/151	31/24	42/147	44/15	27/507	26/84 27/591

average length of unemployment. Those with their highest degrees in engineering other than mechanical, industrial, or aeronautical, and in business, and the life sciences experienced the shortest average length of unemployment. Looking at the unemployment rates, the fields which have the greatest difficulty finding reemployment are the social sciences and the mechanical engineers who represent about 22.5 percent of the responses yet account for about 29 percent of the unemployed. The fields with least difficulty are business and the miscellaneous grouping which represent about 31.5 percent of the responses with an unemployment rate of about 24.5 percent.

Tables 18 and 19 examine the data from the perspective of the age groups of the individuals. In Table 18, the distribution of all of the respondents by age groups is presented, as well as the unemployment rate for each age group (calculated as the ratio of the number of respondents in an age group that are unemployed to the total number of respondents in that age group). Note that the unemployment rate increases with age indicating the difficulty older persons have in gaining reemployment. Note also that the age groups of 20-24 and 25-34 years represent about 30 percent of the respondents, yet only 18 percent of the unemployed. On the other hand those persons 50 years of age and over represent only 25 percent of the respondents but they account for over 37 percent of the unemployed.

In Table 19, the length of unemployment by age groups is presented. Once again, the persons 50 and over who are currently unemployed have experienced a longer average length of unemployment than those persons in corresponding younger age groups.

In Table 20, current employment status is shown tabulated by salary at time of layoff. Those persons with salaries at time of layoff which is less than 150 a week experienced an unemployment rate of about 38 percent ( $239 \div 626$ ) as compared with the total unemployment rate of about 32 percent ( $721 \div 2279$ ). Those who were earning \$150 to \$250 a week had an unemployment rate of about 27 percent while those earning \$250 to \$400 a week had an unemployment rate of about 36 percent.

Table 21 examines the employment status contrasted with family responsibility as measured by the percent of the family income earned by the person laid off, and the number of dependents. The distribution of employment

TABLE 18. AGE GROUPING OF RESPONDENTS AND CORRESPONDING UNEMPLOYMENT RATES

	Age Groups					Total
	20-24	25-34	35-49	Over 50	Age Not Reported	
All Respondents Number	99	651	1066	633	70	2519
Age Distribution of Respondents (%)	3.9	25.8	42.3	25.1	2.9	100.0
Unemployment Rate (%)*	18.4	19.2	31.9	46.6	N/A	31.8
Age Distribution of Unemployed (%)	2.2	15.9	44.5	37.4	N/A	100.0

\*Unemployment rates computed on basis of number of number of respondents who stated that they are currently in the labor market.

TABLE 19. AVERAGE LENGTH OF UNEMPLOYMENT AND DISTRIBUTION, BY CURRENT EMPLOYMENT STATUS (WEEKS/COUNT, FOR THOSE PERSONS STILL IN THE LABOR FORCE) VERSUS AGE

Age Group	Found Permanent Employment		Found Temporary Employment		Unemployed, Seeking Work		Total		
	1st Mailing	Follow-up	1st Mailing	Follow-up	1st Mailing	Follow-up	1st Mailing	Follow-up	Total
20-24	21/32	46/8	34/19	34/12	38/14	39/2	28/65	39/22	31/87
25-34	23/220	19/68	27/174	14/35	42/96	43/22	28/490	22/125	27/615
35-49	20/274	19/86	30/288	43/56	42/275	36/55	31/835	31/197	31/1034
Over 50	18/110	18/24	37/150	32/35	45/226	49/52	36/486	37/111	36/597
Total	21/636	21/186	31/631	32/138	43/611	42/131	32/1878	30/455	32/2333



TABLE 20. DISTRIBUTION OF RESPONSES BY CURRENT EMPLOYMENT STATUS  
VERSUS WEEKLY SALARY AT TIME OF LAYOFF

Weekly Salary at Time of Layoff	Found Permanent Employment		Found Temporary Employment		Unemployed, Seeking Work		Total			Total Percentages
	1st Mailing	Follow-up	1st Mailing	Follow-up	1st Mailing	Follow-up	1st Mailing	Follow-up	Total	
Less than \$100	4	1	0	0	3	0	7	1	8	(0.4)
\$100-\$149	163	55	125	39	178	58	466	152	618	(27.1)
\$150-\$199	231	71	271	58	182	37	684	166	850	(37.3)
\$200-\$249	88	25	112	18	86	14	286	57	343	(15.0)
\$250-\$299	64	18	56	9	76	9	196	36	232	(10.2)
\$300-\$349	47	10	37	7	49	4	133	21	154	(6.8)
\$350-\$399	19	1	16	2	21	1	56	4	60	(2.6)
\$400-\$449	5	0	0	0	1	1	6	1	7	(0.3)
\$450-\$499	3	1	0	0	0	0	3	1	4	(0.2)
\$500 & over	1	1	0	0	1	0	2	1	3	(0.1)
Total	625	183	617	133	597	124	1839	440	2279	(100.0)
Percentages	(27.4)	(8.0)	(27.1)	(5.8)	(26.2)	(5.5)	(80.7)	(19.3)	(100.0)	

TABLE 21. DISTRIBUTION OF RESPONSES BY FAMILY RESPONSIBILITY

Employment Status/Percent of Family Income	First Mailing Responses							Follow-up Responses							First Mailing & Follow- up- Total	Percent- ages
	Number of Dependents						Total	Number of Dependents						Total		
	1	2	3	4	5	6 or more		1	2	3	4	5	6 or more			
1. Permanently Employed	<u>54</u>	<u>123</u>	<u>117</u>	<u>184</u>	<u>95</u>	<u>60</u>	<u>663</u>	<u>21</u>	<u>37</u>	<u>33</u>	<u>42</u>	<u>34</u>	<u>20</u>	<u>187</u>	<u>820</u>	<u>(35.2)</u>
100%	43	50	62	116	72	44	387	16	19	22	31	20	18	126	513	(22.0)
80-99%	3	15	20	23	6	7	74	1	2	4	6	8	1	22	96	(4.1)
40-79%	5	53	30	42	14	9	153	2	13	7	5	6	1	34	187	(8.0)
0-39%	3	5	5	3	3	0	19	2	3	0	0	0	0	5	24	(1.1)
2. Temporarily Employed	<u>60</u>	<u>132</u>	<u>121</u>	<u>154</u>	<u>97</u>	<u>67</u>	<u>631</u>	<u>11</u>	<u>31</u>	<u>30</u>	<u>28</u>	<u>18</u>	<u>20</u>	<u>138</u>	<u>769</u>	<u>(33.0)</u>
100%	46	64	66	116	65	44	401	9	12	12	16	11	15	75	476	(20.4)
80-99%	6	25	24	15	15	13	98	2	3	6	6	1	3	21	119	(5.1)
40-79%	3	40	30	20	15	10	118	0	13	12	6	6	2	39	157	(6.7)
0-39%	5	3	1	3	2	0	14	0	3	0	0	0	0	3	17	(0.8)
3. Unemployed, Seeking Work	<u>92</u>	<u>176</u>	<u>119</u>	<u>101</u>	<u>74</u>	<u>48</u>	<u>610</u>	<u>21</u>	<u>49</u>	<u>26</u>	<u>19</u>	<u>7</u>	<u>8</u>	<u>130</u>	<u>740</u>	<u>(31.8)</u>
100%	72	81	66	59	48	31	357	17	22	12	8	4	6	69	426	(18.3)
80-99%	7	20	13	13	12	6	71	1	6	4	5	1	1	18	89	(3.8)
40-79%	6	64	34	25	14	10	153	2	15	9	3	1	1	31	184	(7.9)
0-39%	7	11	6	4	0	1	29	1	6	1	3	1	0	12	41	(1.8)
Total	206	431	357	439	266	175	1874	53	117	89	89	59	48	455	2329	
Percentages	(11.0)	(23.0)	(19.1)	(23.4)	(14.2)	(9.3)	(100.0)	(11.6)	(25.7)	(19.6)	(19.6)	(13.0)	(10.5)	(100.0)		(100.0)

status for each category defined by number of dependents seems to be relatively constant, indicating that size of family does not represent a significant factor in employment status. Also the distribution of employment status by percent of family income remains relatively the same so that this factor likewise does not appear to be significant. Table 22 collapses the data over family size and expands the categories for percent of family income earned by the person at time of layoff. The highest unemployment rates occur for those persons whose salaries at time of layoff represent less than 60 percent of family income.

Tables 23 and 24 show average salaries at time of layoff and reservation salaries for those persons still in the labor force without permanent jobs. The reservation salaries represent the minimums they would require to accept permanent employment. For those persons with temporary employment, officials and managers appear to be the most desperate skill group, being willing to accept a permanent job at a significantly lower average salary in their present location than they received at time of layoff. For the unemployed persons, both officials and managers and scientists and engineers are willing to accept significantly lower reservation salaries in their present location than they received at time of layoff. Reservation salaries for permanent jobs requiring relocation average from \$40 to \$60 more than reservation salaries in their present location.

Tables 25 and 26 are concerned with the attitudes of the respondents toward returning to aerospace. In Table 25, almost 86 percent of the people who do not have permanent employment indicated that they might return to aerospace. Of these, almost 55 percent said they definitely would return. This latter percentage is in sharp contrast to the 14 percent of the permanently employed persons who would return to aerospace.

Table 26 carries this analysis further, showing the length of unemployment versus attitudes toward aerospace. Notice that the persons with the longer average length of unemployment are more willing to return to aerospace, as you would expect. In some cases, they also are more willing to accept layoffs as a part of the aerospace industry in view of other benefits. Nevertheless, almost 40 percent of the respondents felt that the layoff situation was sufficient cause to leave the industry permanently.

TABLE 22. DISTRIBUTION OF RESPONSES BY CURRENT EMPLOYMENT STATUS  
VERSUS PERCENT OF FAMILY INCOME PROVIDED BY JOB AT TIME  
OF LAYOFF

Percent of Family Income at Time of Layoff	Found Permanent Employment			Found Temporary Employment			Unemployed, Seeking Work			Total			Percentages			
	1st	Follow-	Total	1st	Follow-	Total	1st	Follow-	Total	1st	Follow-	Total	Perm.	Temp.	Unemp.	Total
	Mailing	up		Mailing	up		Mailing	up		Mailing	up		Emp.	Emp.	Unemp.	
0-19%	5	1	6	8	1	9	9	3	12	22	5	27	22.3	33.3	44.4	1.2
20-39%	14	4	18	6	2	8	20	9	29	40	15	55	32.7	14.6	52.7	2.3
40-59%	66	10	76	35	10	45	75	18	93	176	38	214	35.5	21.0	43.5	9.2
60-79%	87	24	111	83	29	112	79	13	92	249	66	315	35.2	35.6	29.2	13.4
80-99%	74	22	96	98	21	119	71	18	89	243	61	304	31.6	39.1	29.3	13.0
100%	388	128	516	402	75	477	360	70	430	1150	273	1423	36.3	33.5	30.2	60.9
Total	634	189	823	632	138	770	614	131	745	1880	458	2338	35.3	32.9	31.8	100.0



TABLE 23. AVERAGE SALARIES AT TIME OF LAYOFF AND RESERVATION SALARIES BY SKILL CLASSIFICATION (WEEKLY SALARY/COUNT) FOR THOSE PERSONS STILL IN LABOR FORCE WITHOUT PERMANENT JOBS (FIRST MAILING)

Skill Classification	TEMPORARY EMPLOYMENT				UNEMPLOYED			
	Average Length of Unemployment (weeks)	Average Salary at Time of Layoff	Average Reservation Salary In Present Location	Average Reservation Salary If Move to Other Location	Average Length of Unemployment (weeks)	Average Salary at Time of Layoff	Average Reservation Salary In Present Location	Average Reservation Salary If Move to Other Location
Officials & Managers	31	\$275/11	\$234/11	\$280/10	54	\$293/14	\$221/14	\$289/14
Scientists & Engineers	30	\$280/108	\$277/103	\$326/96	42	\$286/120	\$242/118	\$298/111
Professional Administrative	27	\$242/71	\$238/70	\$287/67	43	\$261/94	\$259/92	\$313/80
Technicians	30	\$179/167	\$184/156	\$224/145	42	\$168/91	\$161/90	\$207/73
Office & Clerical	47	\$143/60	\$177/60	\$212/51	50	\$134/97	\$143/93	\$194/53
Skilled Labor	29	\$168/113	\$172/108	\$215/98	41	\$165/92	\$157/90	\$203/74
Semi-Skilled & Unskilled Labor	30	\$156/77	\$182/71	\$216/62	41	\$146/79	\$149/79	\$189/53
Unclassified	27	\$175/10	\$175/8	\$232/7	35	\$145/10	\$158/9	\$182/7
Total	31	\$197/617	\$205/587	\$248/536	43	\$200/597	\$189/585	\$245/465

TABLE 24. AVERAGE SALARIES AT TIME OF LAYOFF AND RESERVATION SALARIES BY SKILL CLASSIFICATION (WEEKLY SALARY/COUNT) FOR THOSE PERSONS STILL IN LABOR FORCE WITHOUT PERMANENT JOBS (FOLLOW-UP)

Skill Classification	TEMPORARY EMPLOYMENT				UNEMPLOYED			
	Average Length of Unemployment (weeks)	Average Salary at Time of Layoff	Average Reservation Salary In Present Location	Average Reservation Salary If Move to Other Location	Average Length of Unemployment (weeks)	Average Salary at Time of Layoff	Average Reservation Salary In Present Location	Average Reservation Salary If Move to Other Location
Officials & Managers	161	\$375/1	\$425/1	\$425/1	0	\$0/0	\$0/0	\$0/0
Scientists & Engineers	23	\$278/17	\$297/16	\$325/15	45	\$271/14	\$239/14	\$310/13
Professional Administrative	30	\$236/14	\$283/13	\$340/13	42	\$258/15	\$243/14	\$261/11
Technicians	36	\$175/38	\$187/37	\$227/31	49	\$154/17	\$131/17	\$184/11
Office & Clerical	40	\$154/12	\$171/12	\$206/8	47	\$130/19	\$128/19	\$171/13
Skilled Labor	29	\$154/29	\$165/26	\$207/19	36	\$160/17	\$161/18	\$216/11
Semi-skilled & Unskilled Labor	24	\$150/16	\$200/16	\$232/15	38	\$141/37	\$143/34	\$178/16
Unclassified	24	\$133/16	\$175/5	\$205/5	24	\$145/5	\$175/5	\$175/3
Total	31	\$185/133	\$208/126	\$251/107	41	\$173/124	\$165/121	\$217/78

TABLE 25. ATTITUDES OF RESPONDENTS ABOUT RETURNING  
TO AEROSPACE EMPLOYMENT

	Number of Respondents	Percent of Total Responding to Question			
		Reemployed in Aerospace	Definitely Not	Perhaps	Yes
<u>All Respondents</u>	<u>2315</u>	<u>12.4%</u>	<u>11.6%</u>	<u>35.6%</u>	<u>40.4%</u>
Those Reemployed in What They Consider to Be a Permanent Job	818	17.4	24.9	43.5	14.2
All Other Respondents	1497	9.8	4.3	31.2	54.7

TABLE 26. AVERAGE LENGTH OF UNEMPLOYMENT AND DISTRIBUTION, BY CURRENT EMPLOYMENT STATUS  
(WEEKS/COUNT FOR THOSE STILL IN LABOR FORCE) VS. ATTITUDES TOWARD AEROSPACE  
INDUSTRY

Attitude About Returning To Aerospace	Found Permanent Employment			Found Temporary Employment			Unemployed, Seeking Work			Total Count			Total Percentages
	1st Mailing	Follow-up	Total Count	1st Mailing	Follow-up	Total Count	1st Mailing	Follow-up	Total Count	1st Mailing	Follow-up	Total	
Reemployed in Aerospace	19/115	20/27	142	25/112	27/25	137	30/6	80/3	9	233	55	288	(12.4)
Definitely Not	18/157	22/47	204	26/27	20/10	37	54/23	23/5	28	207	62	269	(11.6)
Perhaps	21/273	19/83	356	32/203	31/48	251	41/182	39/34	216	658	165	823	(35.6)
Yes, Anywhere	24/15	0/0	15	39/63	37/19	82	41/73	35/10	83	151	29	180	( 7.8)
Yes, in Selected Areas	25/71	21/30	101	32/224	36/36	260	44/317	44/77	394	612	143	755	(32.6)
Total	20/631	20/187	818	31/629	32/138	767	44/601	42/129	730	1861	454	2315	(100.0)
Attitude Toward Layoffs in Aerospace													
Acceptable in view of Benefits	28/45	31/19	64	34/41	46/11	52	40/44	38/8	52	130	38	168	( 7.3)
Unfortunate Hard- ship	20/273	18/82	355	32/368	30/79	447	45/347	43/84	431	988	245	1233	(53.6)
Cause to Leave Aerospace	21/310	19/86	396	28/215	32/45	260	42/207	43/36	243	732	167	899	(39.1)
Total	21/628	20/187	815	31/624	32/135	759	44/598	43/128	726	1850	450	2300	(100.0)

### Utilization of Aerospace Skills

The purpose of the following discussion is to summarize the data which reflect on the utilization of the aerospace skills of those persons who have found reemployment. Tables are presented which summarize information on the current types of occupations the respondents have acquired, their assessment of the current use of their skills obtained through aerospace experience and elsewhere, and other comparisons of their present employment with their employment at the time of layoff.

In Table 27, the distribution of present occupation is contrasted with the distribution of occupations at the time of layoff. The occupations which show an increase are maintenance and support services, sales and marketing, and "other". Decreases appear in the areas of production, design and development, documentation, and especially test and evaluation.

Tables 28 and 29 summarize information on the use of aerospace skills for the various occupations and also for the industry or business in which the respondents have found employment. About fifty-five percent of the respondents indicated that the skills they obtained through aerospace employment are being used rather extensively or somewhat in their present employment. Over 80 percent of those in the areas of basic research, design and development, test and evaluation, and documentation are making use of their aerospace skills. The lowest use of aerospace skills are in sales and marketing. Other than those presently in aerospace, the industry where aerospace skills are being used the most is other manufacturing where about 70 percent of the persons employed are using these skills. The lowest usage is in trade and services (about 30 percent). About forty to fifty percent of those in government employment and other categories use their aerospace skills.

Table 30 presents a simplified version of the data in Table 29. Percentage distribution of reemployment by industries is shown. Outside of returns to aerospace, the largest percentage of reemployment has been in other manufacturing and trade and services.

Table 31 presents a comparison of present employment with employment at time of layoff. Significant conclusions from this table are that only about 35 percent of the respondents report that their present job pays as



TABLE 27. DISTRIBUTION OF RESPONSES OF TYPE OF JOB HELD AT TIME OF LAYOFF AND CURRENTLY HELD (FOR THOSE PERSONS CURRENTLY EMPLOYED)

Maintenance & Office Support												Total
Production Services												
Support	Clerical	Administration	Sales & Marketing	Basic Research	Design & Development	Test & Evaluation	Documentation	Other				
<u>First Mailing</u>												
Job Held at Time of Layoff:												
Number	159	142	130	87	7	26	183	249	76	126	1185	
Percentage of Responses	(13.4)	(12.0)	(11.0)	(7.3)	(0.6)	(2.2)	(15.4)	(21.0)	(6.4)	(10.6)	(100.0)	
Job Currently Held:												
Number	146	170	124	81	114	16	145	75	36	278	1185	
Percentage of Responses	(12.3)	(14.3)	(10.5)	(6.8)	(9.6)	(1.4)	(12.2)	(6.3)	(3.0)	(23.5)	(100.0)	
<u>Follow-up Mailing</u>												
Job Held at Time of Layoff:												
Number	54	46	26	21	2	3	30	62	25	28	297	
Percentage of Responses	(18.2)	(15.5)	(8.8)	(7.1)	(0.7)	(1.0)	(10.1)	(20.9)	(8.4)	(9.4)	(100.0)	
Job Currently Held:												
Number	45	50	21	22	33	1	27	23	8	67	297	
Percentage of Responses	(15.2)	(16.8)	(7.1)	(7.4)	(11.1)	(0.3)	(9.1)	(7.7)	(2.7)	(22.6)	(100.0)	
<u>All Respondents</u>												
Job Held at Time of Layoff:												
Number	213	188	156	108	9	29	213	311	101	154	1482	
Percentage of Responses	(14.4)	(12.7)	(10.5)	(7.3)	(0.6)	(2.0)	(14.4)	(21.0)	(6.8)	(10.3)	(100.0)	
Job Currently Held:												
Number	191	220	145	103	147	17	172	98	44	345	1482	
Percentage of Responses	(12.9)	(14.8)	(9.8)	(7.0)	(9.9)	(1.1)	(11.6)	(6.6)	(3.0)	(23.3)	(100.0)	

TABLE 28. DISTRIBUTION OF FIRST MAILING RESPONSES BY USE OF AEROSPACE SKILLS  
VERSUS CURRENT INDUSTRY/BUSINESS OF EMPLOYMENT AND TYPE OF JOB

	Current Type of Job										
<u>Use of Aerospace Skill</u>	<u>Produc- tion</u>	<u>Mainten- ance &amp; Support Services</u>	<u>Office &amp; Clerical Support</u>	<u>Adminis- tration</u>	<u>Sales &amp; Market- ing</u>	<u>Basic Research</u>	<u>Design &amp; Development</u>	<u>Test &amp; Evalua- tion</u>	<u>Documen- tation</u>	<u>Other</u>	<u>Total (Percent)</u>
Highly Related	41	35	26	22	2	6	67	38	18	44	299 (26.9)
Somewhat Related	47	52	38	32	18	6	47	26	15	62	343 (30.9)
Not Related at All	47	63	47	27	86	2	24	15	4	154	469 (42.2)
Total	135	150	111	81	106	14	138	79	37	260	1111 (100.0)

	Current Business or Industry of Employment						
<u>Use of Aerospace Skill</u>	<u>Aerospace</u>	<u>Other Manufacturing</u>	<u>Trade &amp; Services</u>	<u>Government</u>	<u>Other</u>	<u>Total (Percent)</u>	
Highly Related	168	68	20	20	28	302 (26.2)	
Somewhat Related	59	114	67	20	80	340 (29.5)	
Not Related at All	8	78	195	53	176	510 (44.3)	
Total	235	260	280	93	284	1152 (100.0)	

TABLE 29. DISTRIBUTION OF FOLLOW-UP RESPONSES BY USE OF AEROSPACE SKILLS  
VERSUS CURRENT INDUSTRY/BUSINESS OF EMPLOYMENT AND TYPE OF JOB

Current Type of Job											
<u>Use of Aerospace Skills</u>	<u>Produc- tion</u>	<u>Mainten- ance &amp; Support Services</u>	<u>Office &amp; Clerical Support</u>	<u>Adminis- tration</u>	<u>Sales &amp; Market- ing</u>	<u>Basic Research</u>	<u>Design &amp; Development</u>	<u>Test &amp; Evalua- tion</u>	<u>Documen- tation</u>	<u>Other</u>	<u>Total (Percent)</u>
Highly Related	15	15	8	4	2	2	11	12	5	14	88 (31.5)
Somewhat Related	11	17	1	11	3	0	12	7	3	14	79 (28.3)
Not Related at All	14	12	11	8	25	1	4	5	0	32	112 (40.2)
Total	40	44	20	23	30	3	27	24	8	60	279 (100.0)

Current Business or Industry of Employment						
<u>Use of Aerospace Skills</u>	<u>Aerospace</u>	<u>Other Manufacturing</u>	<u>Trade &amp; Services</u>	<u>Government</u>	<u>Other</u>	<u>Total (Percent)</u>
Highly Related	46	23	5	3	15	92 (32.0)
Somewhat Related	14	19	12	7	26	78 (27.2)
Not Related at All	2	21	42	9	43	117 (40.8)
Total	62	63	59	19	84	287 (100.0)

TABLE 30. REEMPLOYMENT EXPERIENCE OF SURVEY RESPONDENTS

	Number of Respondents	Found Job in:			
		Aero.	Other Mfg.	Trade & Services	Gov't. Other
<u>Permanent Job</u>	800	142	187	194	72
(% of Respondents)		(17.8)	(23.4)	(24.2)	(9.0)
<u>Temporary Job</u>	734	159	168	166	47
(% of Respondents)		(21.7)	(22.9)	(22.6)	(6.4)
Relationship of New Job to Aerospace Skills					
	Number of Respondents	Highly Related*	Somewhat Related	Not at All Related	
<u>Permanent Job</u>	623	85	232	306	
<u>Outside of Aerospace</u>		(13.6)	(37.2)	(49.2)	
(% of Respondents)					
<u>Temporary Job</u>	521	8	191	322	
<u>Outside of Aerospace</u>		(1.5)	(36.6)	(61.9)	
(% of Respondents)					

\* Those persons who have found jobs in Aerospace are assumed to have jobs highly related to their Aerospace skills and have not been included in these totals.

TABLE 31. DISTRIBUTION OF RESPONSES OF CURRENT EMPLOYMENT COMPARED WITH  
EMPLOYMENT AT TIME OF LAYOFF: FREQUENCY COUNTS AND (PERCENTAGES)

	First Mailing				Follow-up			
<u>Relationship of Current Employment to:</u>	<u>Highly Related</u>	<u>Somewhat Related</u>	<u>Not Related at All</u>	<u>Total</u>	<u>Highly Related</u>	<u>Somewhat Related</u>	<u>Not Related at All</u>	<u>Total</u>
Aerospace Experience	299 (26.9)	343 (30.9)	469 (42.2)	1111 (100.0)	88 (31.5)	79 (28.3)	112 (40.2)	279 (100.0)
Educational Skills	325 (31.8)	407 (39.9)	289 (28.3)	1021 (100.0)	85 (34.4)	95 (38.5)	67 (27.1)	247 (100.0)
Other Work Experience	349 (33.3)	398 (38.0)	301 (28.7)	1048 (100.0)	97 (37.2)	101 (38.7)	63 (24.1)	261 (100.0)
<u>Comparison of Present Job to Job at Time of Layoff with Respect to:</u>	<u>Worse</u>	<u>Same</u>	<u>Better</u>	<u>Total</u>	<u>Worse</u>	<u>Same</u>	<u>Better</u>	<u>Total</u>
Pay	788 (66.5)	168 (14.2)	229 (19.3)	1185 (100.0)	165 (55.0)	56 (18.7)	79 (26.3)	300 (100.0)
Fringe Benefits	799 (67.9)	254 (21.6)	124 (10.5)	1177 (100.0)	179 (60.3)	77 (25.9)	41 (13.8)	297 (100.0)
Working Conditions	466 (39.5)	433 (36.7)	282 (23.9)	1181 (100.0)	113 (38.0)	109 (36.7)	75 (25.3)	297 (100.0)
Full Use of Skills	546 (46.3)	319 (27.0)	315 (26.7)	1180 (100.0)	121 (40.6)	97 (32.6)	80 (26.8)	298 (100.0)
Job Security	405 (34.6)	319 (27.3)	445 (38.1)	1169 (100.0)	77 (25.9)	97 (32.7)	123 (41.4)	297 (100.0)
Commuting Conditions	411 (34.9)	371 (31.5)	394 (33.5)	1176 (100.0)	93 (31.8)	88 (30.2)	111 (38.0)	292 (100.0)



well or better than that at time of layoff; a third feel that the fringe benefits are as good or better; sixty percent feel the working conditions are as good or better; fifty-four percent feel that they are making full use of their skills; seventy-three percent feel that their job security is the same or better; and sixty-five percent feel that the commuting conditions are the same or better. For those who have found reemployment, the significant losses resulting from their aerospace layoffs appear to be in the areas of pay and fringe benefits.

### Economic Impact

Economic loss, as measured by losses in Federal revenues, State and local revenues, and personal loss, are summarized here. The procedures followed in estimating these losses are described in a subsequent section of this report, entitled Data Processing Procedures. Federal revenue loss has been estimated as the difference in Federal income tax which a person would have been paying had he not been laid off, based on salary at time of layoff, and an estimate of what he did pay, based on length of unemployment, and present salary if employed. State and local revenue loss has been figured similarly for income taxes and sales taxes. Personal loss has been estimated as the difference in estimated actual wages received and what would have been received in the event of no layoff, plus (or minus) the difference in taxes paid, minus any government compensation paid (including social security), minus any lump sum payments at time of layoff, plus any costs associated with relocation and/or job search.

Table 32 presents a summary of the average losses in each category by employment status of the respondents. These losses represent the average total loss for the three year period covering 1968, 1969, and 1970. Using these averages to extrapolate to the entire population of 27,171 persons in the universe sampled, and assuming these 27,171 individuals have the same distribution of employment status as the 2,519 responses, the total extrapolated economic loss resulting from the layoffs is shown in Table 33. The loss in Federal revenues is estimated to be

TABLE 32. SUMMARY OF ESTIMATED AVERAGE LOSSES FOR THE THREE YEAR PERIOD, 1968-1970

	Estimated Employment Status Distribution	Federal Income Tax Revenue Loss	State & Local Income Tax Revenue Loss	State & Local Sales Tax Revenue Loss	Personal Loss
First Mailing	2,017				
Permanently Employed	674	\$1,272	\$262	\$47	\$2,358
Temporarily Employed	629	1,859	343	78	4,105
Unemployed	611	2,868	625	95	3,635
Left Work Force	103	--	--	--	--
Follow-up Mailing	502				
Permanently Employed	168	823	59	38	3,055
Temporarily Employed	158	1,583	330	87	5,066
Unemployed	151	1,839	388	76	3,618
Left Work Force	25	--	--	--	--
Total	2,519	\$1,808	\$379	\$70	\$3,507

TABLE 33. SUMMARY OF EXTRAPOLATED ESTIMATE OF TOTAL LOSSES FOR THE THREE YEAR PERIOD, 1968-1970, FOR THE UNIVERSE OF 27,171 EMPLOYEES

	Estimated Employment Status Distribution	Federal Income Tax Revenue Loss	State & Local Income Tax Revenue Loss	State & Local Sales Tax Revenue Loss	Personal Loss	Total Loss
First Mailing	21,756					
Permanently Employed	7,270	\$ 9.247M	\$1.905M	\$0.342M	\$17.143M	\$ 28.637M
Temporarily Employed	6,785	12.613	2.327	0.529	27.852	43.321
Unemployed	6,590	18.900	4.119	0.626	23.955	47.600
Left Work Force	1,111	--	--	--	--	--
Follow-Up Mailing	5,415					
Permanently Employed	1,812	1.491	0.107	0.069	5.536	7.203
Temporarily Employed	1,704	2.697	0.562	0.148	8.632	12.039
Unemployed	1,629	2.996	0.632	0.124	5.894	9.646
Left Work Force	270	--	--	--	--	--
Total for 3 Years	27,171	\$47.944M	\$9.652M	\$1.838M	\$89.012M	\$148.446M

almost 48 million dollars for the three year period or about 16 million dollars per year. State and Local revenue losses in income taxes are estimated to be about 9.6 million dollars for the three year period or 3.2 million dollars per year. Revenue losses in State and Local sales taxes are estimated to be about 1.8 million dollars, or about 0.6 million dollars per year. The total revenue loss (Federal, State, and Local) is estimated to be almost 20 million dollars per year, resulting from the layoffs of the 27,171 employees.

In addition, the personal loss to the employees is estimated to be about 89 million dollars for three years or almost 30 million dollars per year.

The remaining tables in this section present further detailed information for the averages shown in Table 32.

Estimated average Federal revenue loss by skill classification and employment status is shown in Tables 34 and 35, for the three year period of 1968, 1969, and 1970. From the first mailing responses, the average Federal revenue loss for those persons still in the labor force averages to \$1,917 for 1,392 responses. Similarly for the follow-up, the average loss is \$1,310 for 306 responses.

Estimated average State and local income tax losses are shown in Tables 36 and 37, for each skill classification. The average State and local income tax loss for those persons still in the labor force is estimated to be about \$411 for the first mailing responses and about \$226 for the follow-up responses (for the three year period).

Tables 38 and 39 present similar summaries of State and local sales tax loss estimates. The average loss for the three year period is about \$72 for the first mailing responses, and about \$62 for the follow-up responses.

Tables 40 and 41 summarize personal loss for the first mailing responses and follow-up responses still in the labor force. The average estimated personal loss for the three year period is about \$3,424 for the first mailing responses and \$3,886 for the follow-up responses.

Tables 42 and 43 provide a further breakout of the average personal losses shown in Tables 40 and 41. Averages for the five elements which taken together comprise personal loss are presented in these tables.

TABLE 34. AVERAGE FEDERAL REVENUE LOSS AND DISTRIBUTION BY CURRENT EMPLOYMENT STATUS VERSUS SKILL CLASSIFICATION (AVERAGE/FREQUENCY COUNT, FOR FIRST MAILING RESPONSES)

Skill Classification	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work	Left Work Force	Response Distribution	Sample Distribution	Universe Distribution
Officials and Managers	2930 (15)	5445 (11)	5907 (10)	-- (1)	(37)	(92)	(504)
Scientists and Engineers	2215 (113)	3675 (91)	5757 (87)	-- (12)	(303)	(808)	(4376)
Professional Administrative	1835 (50)	2488 (63)	3569 (69)	-- (8)	(190)	(523)	(2860)
Technicians	851 (117)	1443 (140)	1548 (55)	-- (12)	(324)	(1058)	(5739)
Office and Clerical	617 (77)	1326 (53)	1016 (57)	-- (13)	(200)	(735)	(3998)
Skilled Labor	661 (64)	985 (98)	1249 (50)	-- (5)	(217)	(891)	(4838)
Semiskilled, Unskilled Labor and Service Workers	835 (49)	828 (63)	1088 (34)	-- (6)	(152)	(769)	(4180)
Unclassified	792 (12)	1129 (10)	1113 (6)	-- (0)	(26)	(124)	(676)
Total	1272 (495)	1859 (529)	2868 (368)	-- (57)	(1449)	(5000)	(27171)

TABLE 35. AVERAGE FEDERAL REVENUE LOSS AND DISTRIBUTION BY CURRENT EMPLOYMENT STATUS VERSUS SKILL CLASSIFICATION (AVERAGE/FREQUENCY COUNT, FOR FOLLOW-UP RESPONSES)

Skill Classification	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work	Left Work Force	Response Distribution	Sample Distribution	Universe Distribution
Officials & Managers	1798 (6)	14121 (1)	0 (0)	-- (1)	(8)	(92)	(504)
Scientists & Engineers	3622 (15)	2775 (12)	6809 (6)	-- (1)	(34)	(808)	(4376)
Professional Administrative	713 (12)	2998 (11)	2351 (9)	-- (0)	(32)	(523)	(2860)
Technicians	394 (35)	1312 (35)	1550 (12)	-- (6)	(88)	(1058)	(5739)
Office & Clerical	863 (15)	1551 (10)	792 (11)	-- (4)	(40)	(735)	(3998)
Skilled Labor	657 (29)	796 (26)	1421 (10)	-- (1)	(66)	(891)	(4838)
Semiskilled, Unskilled Labor & Service Workers	326 (20)	885 (9)	1038 (17)	-- (2)	(48)	(769)	(4180)
Unclassified	0 (0)	124 (4)	228 (1)	-- (0)	(5)	(124)	(676)
Total	823 (132)	1583 (108)	1839 (66)	-- (15)	(321)	(5000)	(27171)



TABLE 36. AVERAGE STATE AND LOCAL INCOME TAX LOSS AND DISTRIBUTION BY CURRENT EMPLOYMENT STATUS VERSUS SKILL CLASSIFICATION (AVERAGE/FREQUENCY COUNT FOR FIRST MAILING RESPONSES)

Skill Classification	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work	Left Work Force	Response Distribution	Sample Distribution	Universe Distribution
Officials and Managers	1165 (11)	471 (6)	1373 (10)	-- (0)	(27)	(92)	(504)
Scientists and Engineers	547 (79)	825 (66)	1367 (68)	-- (9)	(222)	(808)	(4376)
Professional Administrative	529 (41)	566 (54)	866 (65)	-- (7)	(167)	(523)	(2860)
Technicians	49 (78)	230 (94)	224 (41)	-- (6)	(219)	(1058)	(5739)
Office and Clerical	106 (62)	206 (42)	174 (54)	-- (11)	(169)	(735)	(3998)
Skilled Labor	77 (49)	152 (79)	207 (40)	-- (3)	(171)	(891)	(4838)
Semiskilled, Unskilled Labor and Service Workers	128 (49)	131 (58)	185 (32)	-- (6)	(145)	(769)	(4180)
Unclassified	101 (9)	193 (6)	196 (5)	-- (0)	(20)	(124)	(676)
Total	262 (378)	343 (405)	625 (315)	-- (42)	(1140)	(5000)	(27171)

TABLE 37. AVERAGE STATE AND LOCAL INCOME TAX LOSS AND DISTRIBUTION BY CURRENT EMPLOYMENT STATUS VERSUS SKILL CLASSIFICATION (AVERAGE/FREQUENCY COUNT, FOR FOLLOW-UP RESPONSES)

Skill Classification	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work	Left Work Force	Response Distribution	Sample Distribution	Universe Distribution
Officials & Managers	569 (6)	3480 (1)	0 (0)	-- (0)	(7)	(92)	(504)
Scientists & Engineers	327 (7)	704 (9)	1756 (6)	-- (1)	(23)	(808)	(4376)
Professional Administrative	-280 (11)	751 (8)	582 (9)	-- (0)	(28)	(523)	(2860)
Technicians	-108 (24)	165 (19)	174 (10)	-- (4)	(57)	(1058)	(5739)
Office & Clerical	159 (13)	189 (6)	147 (11)	-- (3)	(33)	(735)	(3998)
Skilled Labor	96 (25)	128 (18)	261 (10)	-- (1)	(54)	(891)	(4838)
Semiskilled, Unskilled Labor & Service Workers	90 (20)	171 (8)	164 (16)	-- (2)	(46)	(769)	(4180)
Unclassified	0 (0)	8 (3)	63 (1)	-- (0)	(4)	(124)	(676)
Total	59 (106)	330 (72)	388 (63)	-- (11)	(252)	(5000)	(27171)

TABLE 38. AVERAGE STATE AND LOCAL SALES TAX LOSS AND DISTRIBUTION  
BY CURRENT EMPLOYMENT STATUS VERSUS SKILL CLASSIFICATION  
(AVERAGE/FREQUENCY COUNT FOR FIRST MAILING RESPONSE)

Skill Classification	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work	Left Work Force	Response Distribution	Sample Distribution	Universe Distribution
Officials and Managers	34 (13)	136 (10)	208 (10)	-- (1)	(34)	(92)	(504)
Scientists and Engineers	58 (105)	111 (84)	155 (82)	-- (12)	(283)	(808)	(4376)
Professional Administrative	59 (50)	105 (62)	116 (68)	-- (8)	(188)	(523)	(2860)
Technicians	46 (110)	77 (132)	61 (54)	-- (11)	(307)	(1058)	(5739)
Office and Clerical	35 (73)	72 (51)	52 (56)	-- (13)	(193)	(735)	(3998)
Skilled Labor	44 (57)	53 (91)	59 (47)	-- (5)	(200)	(891)	(4838)
Semiskilled, Unskilled Labor and Service Workers	48 (49)	43 (63)	54 (34)	-- (6)	(152)	(769)	(4180)
Unclassified	53 (9)	72 (6)	65 (5)	-- (0)	(20)	(124)	(676)
Total	47 (466)	78 (499)	95 (356)	-- (56)	(1377)	(5000)	(27171)

TABLE 39. AVERAGE STATE AND LOCAL SALES TAX LOSS AND DISTRIBUTION BY CURRENT EMPLOYMENT STATUS  
VERSUS SKILL CLASSIFICATION (AVERAGE/FREQUENCY COUNT, FOR FOLLOW-UP RESPONSES)

Skill Classification	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work	Left Work Force	Response Distribution	Sample Distribution	Universe Distribution
Officials & Managers	43 (6)	1185 (1)	0 (0)	-- (1)	(8)	(92)	(504)
Scientists & Engineers	110 (14)	104 (11)	177 (6)	-- (1)	(32)	(808)	(4376)
Professional Administrative	23 (12)	173 (10)	76 (9)	-- (0)	(31)	(523)	(2860)
Technicians	33 (33)	77 (30)	67 (12)	-- (6)	(81)	(1058)	(5739)
Office & Clerical	61 (14)	86 (9)	57 (11)	-- (4)	(38)	(735)	(3998)
Skilled Labor	29 (27)	30 (20)	94 (10)	-- (1)	(58)	(891)	(4838)
Semiskilled, Unskilled Labor & Service Workers	25 (20)	40 (9)	51 (16)	-- (2)	(47)	(769)	(4180)
Unclassified	0 (0)	0 (3)	0 (1)	-- (0)	(4)	(124)	(676)
Total	38 (126)	87 (93)	76 (65)	-- (15)	(299)	(5000)	(27171)

TABLE 40. AVERAGE PERSONAL LOSS AND DISTRIBUTION BY CURRENT EMPLOYMENT STATUS VERSUS SKILL CLASSIFICATION (AVERAGE/FREQUENCY COUNT FOR FIRST MAILING RESPONSES)

Skill Classification	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work	Left Work Force	Response Distribution	Sample Distribution	Universe Distribution
Officials and Managers	138 (15)	4307 (11)	8276 (10)	-- (1)	(37)	(92)	(504)
Scientists and Engineers	1862 (113)	3876 (91)	2476 (87)	-- (12)	(303)	(808)	(4376)
Professional Administrative	1900 (50)	5995 (63)	4048 (69)	-- (8)	(190)	(523)	(2860)
Technicians	3616 (117)	4065 (140)	4561 (55)	-- (12)	(324)	(1058)	(5739)
Office and Clerical	2177 (77)	4447 (53)	3511 (57)	-- (13)	(200)	(735)	(3998)
Skilled Labor	1635 (64)	3527 (98)	3376 (50)	-- (5)	(217)	(891)	(4838)
Semiskilled, Unskilled Labor and Service Workers	3081 (49)	3393 (63)	3304 (34)	-- (6)	(152)	(769)	(4180)
Unclassified	1371 (10)	2929 (10)	4655 (6)	-- (0)	(26)	(124)	(676)
Total	2358 (495)	4105 (529)	3635 (368)	-- (57)	(1449)	(5000)	(27171)

TABLE 41. AVERAGE PERSONAL LOSS AND DISTRIBUTION BY CURRENT EMPLOYMENT STATUS VERSUS SKILL CLASSIFICATION (AVERAGE/FREQUENCY COUNT, FOR FOLLOW-UP RESPONSES)

Skill Classification	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work	Left Work Force	Response Distribution	Sample Distribution	Universe Distribution
Officials & Managers	4890 (6)	35668 (1)	0 (0)	-- (1)	(8)	(92)	(504)
Scientists & Engineers	6570 (15)	4906 (12)	4828 (6)	-- (1)	(34)	(808)	(4376)
Professional Administrative	1230 (12)	8652 (11)	1996 (9)	-- (0)	(32)	(523)	(2860)
Technicians	2919 (35)	5381 (35)	5403 (12)	-- (6)	(88)	(1058)	(5739)
Office & Clerical	1979 (15)	7158 (10)	3771 (11)	-- (4)	(40)	(735)	(3998)
Skilled Labor	2886 (29)	2931 (26)	4425 (10)	-- (1)	(66)	(891)	(4838)
Semiskilled, Unskilled Labor & Service Workers	2256 (20)	2381 (9)	2435 (17)	-- (2)	(48)	(769)	(4180)
Unclassified	0 (0)	-34 (4)	-115 (1)	-- (0)	(5)	(124)	(676)
Total	3055 (132)	5066 (108)	3618 (66)	-- (15)	(321)	(5000)	(27171)

TABLE 42. AVERAGE PERSONAL LOSS BY SKILL CLASSIFICATION VERSUS ELEMENTS OF PERSONAL LOSSES AND GAINS (FIRST MAILING RESPONSES)

Employment Status/Skill Classification	Average Personal Loss	Personal Losses		Personal Gains			No. of Responses
		Average Income Loss	Average Job Search & Relocation Cost	Average Savings in Tax Payments	Average Gov't Compensation Received	Average Lump Sum Payments Received	
Permanently Employed							
Off. & Mgrs.	\$ 138	\$ 5,168	\$1,903	\$3,815	\$ 542	\$2,576	15
Sci. & Engrs.	1,862	5,400	1,022	2,652	657	1,250	113
Prof. Adm.	1,900	4,747	2,117	2,389	572	2,003	50
Technicians	3,616	4,656	1,300	928	777	634	117
Off. & Cler.	2,177	4,010	263	767	941	387	77
Skilled Lab.	1,635	3,329	333	757	522	747	64
Semi, Unsk. Lab. & Serv. Wkrs.	3,081	4,866	275	1,011	711	336	49
Unclass.	1,371	3,517	570	931	1,204	580	10
Temporarily Employed							
Off. & Mgrs.	4,307	12,697	229	5,826	984	1,808	11
Sci. & Engrs.	3,876	9,739	596	4,377	1,000	1,081	91
Prof. Adm.	5,995	10,035	925	3,077	910	978	63
Technicians	4,065	7,000	830	1,671	1,077	1,016	140
Off. & Cler.	4,447	6,993	824	1,560	1,409	401	53
Skilled Lab.	3,527	5,537	625	1,158	1,055	421	98
Semi, Unsk. Lab. & Serv. Wkrs.	3,393	5,423	335	992	894	478	63
Unclass.	2,929	5,721	70	1,288	880	693	10
Unemployed							
Off. & Mgrs.	8,276	16,448	1,837	7,488	1,077	1,442	10
Sci. & Engrs.	2,476	11,497	352	6,973	1,344	1,056	87
Prof. Adm.	4,048	10,493	533	4,500	1,422	1,054	69
Technicians	4,561	7,501	792	1,776	1,388	567	55
Off. & Cler.	3,511	6,356	179	1,233	1,433	356	57
Skilled Lab.	3,376	6,220	141	1,470	1,192	322	50
Semi, Unsk. Lab. & Serv. Wkrs.	3,304	6,220	252	1,317	1,402	449	34
Unclass.	4,655	7,161	458	1,331	1,245	387	6

TABLE 43. AVERAGE PERSONAL LOSS BY SKILL CLASSIFICATION VERSUS ELEMENTS OF PERSONAL LOSSES AND GAINS (FOLLOW-UP RESPONSES)

Employment Status/Skill Classification	Average Personal Loss	Personal Losses		Personal Gains			No. of Responses
		Average Income Loss	Average Job Search & Relocation Cost	Average Savings in Tax Payments	Average Gov't Compensation Received	Average Lump Sum Payments Received	
Permanently Employed							
Off. & Mgrs.	\$ 4,890	\$ 6,462	\$3,401	\$ 2,380	\$ 381	\$2,211	6
Sci. & Engrs.	6,570	9,630	2,214	3,878	740	655	15
Prof. Adm.	1,230	682	637	-993	355	727	12
Technicians	2,919	4,209	423	351	688	673	35
Off. & Cler.	1,979	4,705	28	1,059	1,397	298	15
Skilled Lab.	2,886	3,809	982	768	707	430	29
Semi, Unsk. Lab. & Serv. Wkrs.	2,256	3,293	309	442	512	391	20
Unclass.	0	0	0	0	0	0	0
Temporarily Employed							
Off. & Mgrs.	35,668	53,554	3,250	18,786	0	2,350	1
Sci. & Engrs.	4,906	8,714	1,264	3,399	1,043	629	12
Prof. Adm.	8,652	12,474	1,376	3,702	607	888	11
Technicians	5,381	7,070	1,106	1,469	743	582	35
Off. & Cler.	7,158	8,934	839	1,742	705	168	10
Skilled Lab.	2,931	5,311	81	909	1,181	370	26
Semi, Unsk. Lab. & Serv. Wkrs.	2,381	4,954	0	1,077	986	508	9
Unclass.	-34	813	0	130	353	363	4
Unemployed							
Off. & Mgrs.	0	0	0	0	0	0	0
Sci. & Engrs.	4,828	15,011	912	8,742	1,582	770	6
Prof. Adm.	1,996	7,667	177	3,010	1,480	1,358	9
Technicians	5,403	7,918	937	1,762	1,171	518	12
Off. & Cler.	3,771	6,061	0	997	1,069	222	11
Skilled Lab.	4,425	7,567	635	1,778	1,358	640	10
Semi, Unsk. Lab. & Serv. Wkrs.	2,435	5,446	0	1,241	1,413	356	17
Unclass.	-115	1,911	0	291	1,235	500	1

Tables 44 and 45 present estimated average personal loss versus attitude toward returning to aerospace. It might be expected that those persons with higher losses might not be willing to return to aerospace although this is not readily apparent from the tables. Some of the groups with higher losses indicate that they would be willing to return. Also note that those with temporary employment seem to have suffered the highest personal losses. They may have accepted temporary employment out of desperation.

Tables 46 and 47 examine estimated average personal loss by reservation salaries. As one might have expected, the tables indicate a trend that those persons with higher personal loss, indicating the severity of their economic situation, seem more willing to accept lower salaries.

#### Relocation Experience/Mobility

The following tables summarize information related to the geographic mobility of the laid off aerospace employees. The tables present mobility patterns versus other factors which may influence mobility such as skill classification, occupation, educational attainment, age, and sex and marital status.

The first set of tables presents the percentage distribution of mobility, as measured by moves to accept the job from which they were laid off and moves since their layoff. Separate tables are presented for responses to the first mailing and follow-up responses.

Tables 48 and 49 summarize mobility by skill classification. The least mobile skill classifications appear to be the blue collar workers (skilled, semiskilled, unskilled labor, and service workers) and the office and clerical workers. White collar employees such as officials and managers, scientists and engineers, professional administrative, and technicians appear to be the most mobile.

From Tables 50 and 51, the most mobile occupation classes, measured by type of job held at time of layoff, appear to be administration, design and development, test and evaluation, and possibly basic research



TABLE 44. AVERAGE PERSONAL LOSS BY CURRENT EMPLOYMENT STATUS VERSUS ATTITUDE TOWARD RETURNING TO AEROSPACE EMPLOYMENT (AVERAGE/FREQUENCY COUNT, FOR FIRST MAILING RESPONSES)

Willingness to Return to Aerospace	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work
In Aerospace	1241 (84)	2681 (97)	-- --
Definitely Not	1784 (121)	3845 (19)	6679 (15)
Perhaps	2767 (215)	4508 (167)	3096 (116)
Yes, Anywhere	3066 (11)	5971 (52)	3659 (37)
Yes, In Selected Locations	3247 (59)	4021 (192)	3794 (193)
Total	2327 (490)	4115 (527)	3676 (361)

TABLE 45. AVERAGE PERSONAL LOSS BY CURRENT EMPLOYMENT STATUS VERSUS ATTITUDE TOWARD RETURNING TO AEROSPACE EMPLOYMENT (AVERAGE/FREQUENCY COUNT, FOR FOLLOW-UP RESPONSES)

Willingness to Return to Aerospace	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work
In Aerospace	5068 (16)	3629 (16)	8301 (2)
Definitely Not	3660 (32)	3837 (8)	-830 (2)
Perhaps	2508 (61)	5625 (37)	6484 (12)
Yes, Anywhere	0 (0)	7397 (17)	2771 (5)
Yes, in Selected Locations	2265 (23)	4150 (30)	2937 (45)
Total	3055 (132)	5066 (108)	3618 (66)

TABLE 46. AVERAGE PERSONAL LOSS BY CURRENT EMPLOYMENT STATUS VERSUS RESERVATION SALARY  
(AVERAGE/FREQUENCY COUNT, FIRST MAILING RESPONSES)

Reservation Salary	In Present Location			If Relocation is Necessary		
	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work
Less Than \$100	4031 (13)	4117 (10)	3811 (12)	513 (3)	2085 (1)	3971 (3)
100 - 149	3780 (93)	4322 (86)	3772 (114)	4411 (25)	4122 (27)	3783 (27)
150 - 199	1593 (106)	4287 (199)	4502 (101)	2951 (76)	4530 (109)	4402 (71)
200 - 249	3286 (75)	5350 (102)	3401 (56)	2019 (86)	4057 (141)	3348 (64)
250 - 299	2658 (43)	2806 (49)	1830 (43)	3633 (49)	4030 (74)	2546 (35)
300 - 349	-2036 (24)	1885 (36)	1045 (13)	2887 (41)	3410 (52)	3194 (42)
350 - 399	-2137 (5)	9661 (7)	1505 (4)	-1190 (20)	3950 (27)	1325 (15)
400 - 449	-1269 (3)	0 (0)	1048 (4)	228 (10)	3669 (11)	7331 (9)
450 - 499	3232 (4)	-7371 (1)	2246 (1)	-1481 (4)	-1905 (2)	4563 (2)
500 & Over	2240 (13)	3798 (10)	4151 (7)	2080 (19)	4147 (12)	1822 (14)
Total	2397 (379)	4230 (500)	3535 (355)	2457 (333)	4052 (456)	3491 (282)

TABLE 47. AVERAGE PERSONAL LOSS BY CURRENT EMPLOYMENT STATUS  
VERSUS RESERVATION SALARY (AVERAGE/FREQUENCY COUNT, FOLLOW-  
UP RESPONSES)

Reservation Salary	In Present Location			If Relocation is Necessary		
	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work	Found Permanent Employment	Found Temporary Employment	Unemployed, Seeking Work
Less than \$100	8085 (6)	7789 (2)	4950 (5)	4605 (1)	0 (0)	0 (0)
100-149	3654 (22)	3506 (23)	4299 (27)	4105 (8)	7001 (5)	5883 (5)
150-199	1986 (34)	4217 (42)	1825 (19)	3598 (22)	4261 (35)	2127 (11)
200-249	2294 (19)	6946 (13)	5882 (7)	2346 (23)	5525 (17)	7149 (6)
250-299	1552 (9)	6158 (10)	2616 (4)	-146 (13)	4791 (13)	4058 (7)
300-349	1038 (4)	7475 (7)	0 (0)	2052 (7)	9227 (8)	79 (3)
350-399	-6074 (2)	0 (0)	0 (0)	5578 (6)	1053 (4)	11076 (1)
400-449	3048 (1)	21510 (2)	0 (0)	-380 (2)	19313 (3)	0 (0)
450-499	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
500 and over	4360 (4)	2223 (3)	2490 (1)	2682 (7)	3721 (4)	0 (0)
Total	2638 (101)	5169 (102)	3645 (63)	2435 (89)	5519 (89)	4104 (13)

TABLE 48. DISTRIBUTION OF FIRST MAILING RESPONSES BY MOBILITY  
VERSUS SKILL CLASSIFICATION (Percentages)

Skill Classification	Number of Responses	Moved To Accept Job From Which Layed Off		Did Not Move To Accept Job From Which Layed Off	
		Moved Since Layoff	Did Not Move Since Layoff	Moved Since Layoff	Did Not Move Since Layoff
Officials & Managers	46	30.4%	19.6%	6.5%	43.5%
Scientists & Engineers	394	23.9	22.1	5.6	48.4
Professional Administrative	239	17.2	10.5	10.9	61.4
Technician	429	23.5	8.9	12.1	55.5
Office & Clerical	271	8.1	6.6	13.3	72.0
Skilled Labor	293	13.3	12.3	8.2	66.2
Semi & Unskilled Labor and Service Workers	229	10.9	7.4	14.4	67.3
Unclassified	34	14.7	20.6	5.9	58.8
Total	1,935	17.7%	12.2%	10.2%	59.9%

TABLE 49. DISTRIBUTION OF FOLLOW-UP RESPONSES BY MOBILITY  
VERSUS SKILL CLASSIFICATION (Percentages)

Skill Classification	Number of Responses	Moved To Accept Job From Which Layed Off		Did Not Move To Accept Job From Which Layed Off	
		Moved Since Layoff	Did Not Move Since Layoff	Moved Since Layoff	Did Not Move Since Layoff
Officials & Managers	9	44.4%	22.2%	11.2%	22.2%
Scientists & Engineers	60	36.7	8.3	11.7	43.3
Professional Administrator	50	18.0	16.0	8.0	58.0
Technician	108	18.5	9.3	13.9	58.3
Office & Clerical	57	10.5	5.3	8.8	75.4
Skilled Labor	86	11.6	8.1	5.8	74.5
Semi, Unskilled Labor & Service Worker	79	3.8	11.4	2.5	82.3
Unclassified	12	16.7	0.0	0.0	83.2
Total	461	16.5%	9.5%	8.5%	65.5%

TABLE 50. DISTRIBUTION OF FIRST MAILING RESPONSES BY MOBILITY  
VERSUS TYPE OF JOB HELD AT LAYOFF (Percentages)

Type Of Job Held At Time Of Layoff	Number Of Responses	Moved To Accept Job From Which Layed Off		Did Not Move To Accept Job From Which Layed Off	
		Moved Since Layoff	Did Not Move Since Layoff	Moved Since Layoff	Did Not Move Since Layoff
Production	254	11.0%	9.1%	11.4%	68.5%
Maintenance & Support Services	203	25.1	10.8	8.9	55.2
Office & Clerical Support	230	9.6	5.2	16.5	68.7
Administration	143	18.9	15.4	11.2	54.5
Sales & Marketing	12	25.0	8.3	8.3	58.4
Basic Research	35	11.4	22.9	5.7	60.0
Design & Development	257	24.9	14.4	6.6	54.1
Test & Evaluation	348	21.8	15.8	8.9	53.5
Documentation	129	20.2	11.6	9.3	58.9
Other	211	14.7	13.7	10.4	61.2
Total	1,822	18.2%	12.3%	10.2%	59.3%

TABLE 51. DISTRIBUTION OF FOLLOW-UP RESPONSES BY MOBILITY  
VERSUS TYPE OF JOB HELD AT LAYOFF (Percentages)

Type of Job Held At Time Of Layoff	Number Of Responses	Moved To Accept Job From Which Layed Off		Did Not Move To Accept Job From Which Layed Off	
		Moved Since Layoff	Did Not Move Since Layoff	Moved Since Layoff	Did Not Move Since Layoff
Production	82	8.6%	13.4%	2.4%	75.6%
Maintenance	66	16.7	7.6	10.6	65.1
Office & Clerical	47	12.8	2.1	12.8	72.3
Administration	30	26.7	3.3	6.7	63.3
Sales & Marketing	3	0.0	0.0	0.0	100.0
Basic Research	3	66.7	0.0	0.0	33.3
Design & Development	38	23.7	10.5	10.5	55.3
Test & Evaluation	82	22.0	13.4	8.5	56.1
Documentation	31	12.9	16.1	16.1	54.9
Other	50	14.0	8.0	10.0	68.0
Total	432	16.7%	9.7%	8.8%	64.8%

and documentation personnel. Production workers, and office and clerical workers, seem to be the least mobile types.

From Tables 52 and 53, it appears that geographic mobility has a strong relationship to educational attainment of the respondents. Those persons with higher educations tend to be more mobile.

Tables 54 and 55 examine mobility from the point of view of age of the respondents. Younger persons tend to be more mobile as might be expected. Respondents over 40 years of age tend to be less mobile, averaging about 60 percent or over who have neither moved to accept the job from which they were laid off, nor moved since.

Tables 56 and 57 present data on mobility by sex and marital status. Female respondents seem to be less mobile than males. Marital status does not seem to be significant except in the case of single female respondents who tend to be more mobile.

Tables 58 through 61 present mobility patterns by areas of the country, both to accept the job from which the respondents were laid off, and in terms of moves since their layoff. The regions of the country used in this tabulation follow the regional classification of states by the U. S. Department of Commerce. As expected, Tables 58 and 59 show that the major movement of persons was to the Southeast (Florida) and the Far West (California). The pattern of movement since their layoff, shown in Tables 60 and 61, indicate that a large percentage of the respondents stayed in the Southeast and the Far West.

#### Job Search and Assistance

Information on the methods used by the respondents in seeking employment and the effectiveness of these methods are summarized in Tables 62 and 63, for those respondents who found either permanent or temporary employment. The methods most frequently used were private employment agencies, state employment agencies, friends and relatives, help wanted advertisements, and direct application to employers. Of these, the most effective sources in seeking reemployment were friends and



TABLE 52. DISTRIBUTION OF FIRST MAILING RESPONSES BY MOBILITY  
VERSUS EDUCATIONAL ATTAINMENT (Percentages)

Educational Attainment	Number of Response	Moved To Accept Job From Which Layed Off		Did Not Move to Accept Job From Which Layed Off	
		Moved Since Layoff	Did Not Move Since Layoff	Moved Since Layoff	Did Not Move Since Layoff
Less than High School	172	12.2%	10.5%	8.7%	68.6%
High School	659	11.7	11.1	13.0	64.2
Trade/Technical School	413	18.6	10.6	8.0	62.8
Associate Degree	163	20.2	6.1	9.8	63.9
Bachelor's Degree	412	24.0	16.5	9.0	50.5
Master's Degree	100	31.0	20.0	9.0	40.0
Doctorate Degree	15	26.7	26.7	13.3	33.3
Total	1,934	17.7%	12.3%	10.2%	59.8%

TABLE 53. DISTRIBUTION OF FOLLOW-UP RESPONSES BY MOBILITY  
VERSUS EDUCATIONAL ATTAINMENT (Percentages)

Educational Attainment	Number of Responses	Moved To Accept Job From Which Layed Off		Did Not Move To Accept Job From Which Layed Off	
		Moved Since Layoff	Did Not Move Since Layoff	Moved Since Layoff	Did Not Move Since Layoff
Less than High School	53	11.3%	9.4%	3.8%	75.5%
High School	181	12.2	9.4	9.9	68.5
Trade/Technical School	98	11.2	12.2	5.1	71.5
Associate Degree	33	18.2	6.1	9.1	66.6
Bachelor's Degree	84	32.1	7.1	14.3	46.5
Master's Degree	11	36.4	18.2	0.0	45.4
Doctorate Degree	2	0.0	50.0	0.0	50.0
Total	462	16.4%	9.7%	8.7%	65.2%

TABLE 54. DISTRIBUTION OF FIRST MAILING RESPONSES BY MOBILITY  
VERSUS AGE (Percentages)

Age Distribution	Number Of Responses	Moved To Accept Job From Which Layed Off		Did Not Move To Accept Job From Which Layed Off	
		Moved Since Layoff	Did Not Move Since Layoff	Moved Since Layoff	Did Not Move Since Layoff
20 - 24	72	18.1%	1.4%	33.3%	47.2%
25 - 29	252	19.8	9.5	15.1	55.6
30 - 34	261	21.8	11.1	10.7	56.4
35 - 39	259	22.8	13.9	12.0	51.3
40 - 44	257	16.0	12.8	6.2	65.0
45 - 49	332	17.2	13.9	6.6	62.3
50 - 54	266	13.9	14.3	5.6	66.2
55 - 59	151	13.2	9.9	8.6	68.3
60 - 65	82	7.3	17.1	12.2	63.4
Total	1,932	17.6%	12.2%	10.2%	60.0%

TABLE 55. DISTRIBUTION OF FOLLOW-UP RESPONSES BY MOBILITY  
VERSUS AGE (Percentages)

Age Distribution	Number Of Responses	Moved To Accept Job From Which Layed Off		Did Not Move To Accept Job From Which Layed Off	
		Moved Since Layoff	Did Not Move Since Layoff	Moved Since Layoff	Did Not Move Since Layoff
20 - 24	26	19.2%	0.0%	15.4%	65.4%
25 - 29	69	15.9	5.8	14.5	63.8
30 - 34	59	22.0	8.5	8.5	61.0
35 - 39	62	19.4	14.5	4.8	61.3
40 - 44	62	17.7	17.7	4.8	59.8
45 - 49	73	19.2	6.8	9.6	64.4
50 - 54	59	5.1	11.9	5.1	77.9
55 - 59	35	11.4	11.4	5.7	71.5
60 - 65	16	18.8	0.0	12.5	68.7
Total	461	16.5%	9.8%	8.5%	65.2%

TABLE 56. DISTRIBUTION OF FIRST MAILING RESPONSES BY MOBILITY  
VERSUS SEX AND MARITAL STATUS (Percentages)

Sex/Marital Status	Number of Responses	Moved To Accept Job From Which Layed Off		Did Not Move To Accept Job From Which Layed Off	
		Moved Since Layoff	Did Not Move Since Layoff	Moved Since Layoff	Did Not Move Since Layoff
Male/Single	126	26.2%	11.9%	10.3%	51.6%
Male/Married	1,389	19.4	12.7	9.4	58.5
Male/Other	108	21.3	13.9	9.3	55.5
Female/Single	32	6.3	21.9	28.1	43.7
Female/Married	219	5.5	8.2	11.9	74.4
Female/Other	69	4.3	8.7	15.9%	71.1
Total	1,943	17.6%	12.2%	10.2%	60.0%

TABLE 57. DISTRIBUTION OF FOLLOW-UP RESPONSES BY MOBILITY  
VERSUS SEX AND MARITAL STATUS (Percentages)

Sex/Marital Status	Number of Responses	Moved To Accept Job From Which Layed Off		Did Not Move To Accept Job From Which Layed Off	
		Moved Since Layoff	Did Not Move Since Layoff	Moved Since Layoff	Did Not Move Since Layoff
Male/Single	40	15.0%	20.0%	10.0%	55.0%
Male/Married	334	17.1	10.2	8.1	64.6
Male/Other	18	33.3	0.0	11.1	55.6
Female/Single	11	27.3	9.0	27.3	36.4
Female/Married	52	7.7	3.8	5.8	82.7
Female/Other	9	0.0	0.0	11.1	88.9
Total	464	16.4%	9.7%	8.6%	65.3%

TABLE 58. DISTRIBUTION OF FIRST MAILING RESPONSES BY MOVES TO PLANT LOCATION VERSUS REGION MOVED FROM (FOR PERSONS WHO RELOCATED TO ACCEPT THE JOB FROM WHICH THEY WERE LAID OFF)

Plant Location	Location Moved From								Total (Percentages)
	New England	Mid East	South East	Great Lakes	Plains	South West	Rocky Mtns.	Far West	
Mideast	0	1	2	0	0	0	0	0	3 (0.9)
Southeast	1	11	123	15	13	7	2	15	187 (53.9)
Southwest	0	0	5	0	0	1	0	3	9 (2.6)
Far West	2	6	2	9	4	4	2	103	132 (38.0)
Unclassified	1	7	3	1	1	2	0	1	16 (4.6)
Total Percentages	4 (1.2)	25 (7.2)	135 (38.9)	25 (7.2)	18 (5.2)	14 (4.0)	4 (1.2)	122 (35.1)	347 (100.0)

TABLE 59. DISTRIBUTION OF FOLLOW-UP RESPONSES BY MOVES TO PLANT LOCATION VERSUS REGION MOVED FROM (FOR PERSONS WHO RELOCATED TO ACCEPT THE JOB FROM WHICH THEY WERE LAID OFF)

Plant Location	Location Moved From								Total (Percentages)
	New England	Mid East	South East	Great Lakes	Plains	South West	Rocky Mtns.	Far West	
Mideast	0	0	0	0	0	0	0	1	1 (1.4)
Southeast	1	1	34	3	2	2	0	3	46 (62.2)
Southwest	0	0	1	0	0	0	0	0	1 (1.4)
Far West	1	1	1	2	0	1	2	16	24 (32.3)
Unclassified	0	0	2	0	0	0	0	0	2 (2.7)
Total Percentages	2 (2.7)	2 (2.7)	38 (51.4)	5 (6.8)	2 (2.7)	3 (4.0)	2 (2.7)	20 (27.0)	74 (100.0)

TABLE 60. DISTRIBUTION OF FIRST MAILING RESPONSES BY MOVES FROM PLANT LOCATION VERSUS REGION MOVED TO (FOR PERSONS WHO HAVE RELOCATED SINCE THEIR LAYOFF)

Plant Location	Location To Which Moved								Total
	New England	Mid East	South East	Great Lakes	Plains	South West	Rocky Mtns.	Far West	
Mideast	0	1	0	0	0	0	0	0	1 (0.2)
Southeast	4	13	119	17	12	20	8	16	209 (50.5)
Southwest	0	0	2	1	1	2	0	0	6 (1.4)
Far West	7	7	6	9	8	7	7	124	175 (42.3)
Unclassified	1	6	8	0	2	4	0	2	23 (5.6)
Total	12 (2.9)	27 (6.5)	135 (32.6)	27 (6.5)	23 (5.6)	33 (8.0)	15 (3.6)	142 (34.3)	414 (100.0)

TABLE 61. DISTRIBUTION OF FOLLOW-UP RESPONSES BY MOVES FROM PLANT LOCATION VERSUS REGION MOVED TO (FOR PERSONS WHO HAVE RELOCATED SINCE THEIR LAYOFF)

Plant Location	Location To Which Moved								Total (Percentages)
	New England	Mid West	South East	Great Lakes	Plains	South West	Rocky Mtns.	Far West	
Mideast	0	0	0	0	0	0	0	1	1 (1.0)
Southeast	2	2	35	7	2	10	0	2	60 (58.3)
Southwest	0	0	1	0	0	0	1	0	2 (1.9)
Far West	2	2	2	2	0	1	2	24	35 (34.0)
Unclassified	0	5	0	0	0	0	0	0	5 (4.8)
Total Percentages	4 (3.9)	9 (8.7)	38 (36.9)	9 (8.7)	2 (1.9)	11 (10.7)	3 (2.9)	27 (26.3)	103 (100.0)



TABLE 62. DISTRIBUTION OF FIRST MAILING RESPONSES BY METHODS USED TO SEEK EMPLOYMENT VERSUS USEFULNESS OF METHODS FOR THOSE PERSONS WHO FOUND EMPLOYMENT (COUNTS/PERCENTAGES)

Methods Used to Seek Employment	Not Available	Did not Use	Used and Found Helpful	Used but Did Not Find Helpful	Total
Assistance from company from which laid off	697 (60.1)	189 (16.3)	57 (4.9)	216 (18.7)	1159 (100.0)
Labor unions	745 (65.1)	350 (30.6)	22 (1.9)	27 (2.4)	1144 (100.0)
Professional/trade organizations	547 (47.8)	462 (40.4)	37 (3.2)	98 (8.6)	1144 (100.0)
Private employment agencies	46 (4.0)	524 (45.2)	123 (10.6)	465 (40.2)	1158 (100.0)
State employment agencies	40 (3.4)	351 (30.2)	70 (6.0)	702 (60.4)	1163 (100.0)
Friends and relatives	63 (5.4)	313 (26.6)	515 (43.8)	285 (24.2)	1176 (100.0)
Help wanted advertisements	32 (2.7)	207 (17.6)	325 (27.6)	612 (52.1)	1176 (100.0)
Direct application to employers	17 (1.4)	67 (5.6)	608 (50.8)	506 (42.2)	1198 (100.0)
Others	1 (1.2)	6 (7.0)	57 (67.1)	21 (24.7)	85 (100.0)

TABLE 63. DISTRIBUTION OF FOLLOW-UP RESPONSES BY METHODS USED TO SEEK EMPLOYMENT VERSUS USEFULNESS OF METHODS FOR THOSE PERSONS WHO FOUND EMPLOYMENT (COUNTS/PERCENTAGES)

Methods Used to Seek Employment	Not Available	Did not Use	Used and Found Helpful	Used but Did Not Find Helpful	Total
Assistance from company from which laid off	152 (55.5)	69 (25.2)	11 (4.0)	42 (15.3)	274 (100.0)
Labor unions	153 (56.5)	106 (39.1)	2 (0.7)	10 (3.7)	271 (100.0)
Professional/trade organizations	101 (37.5)	135 (50.2)	8 (3.0)	25 (9.3)	269 (100.0)
Private employment agencies	11 (4.0)	161 (58.5)	26 (9.5)	77 (28.0)	275 (100.0)
State employment agencies	11 (4.0)	109 (39.5)	16 (5.8)	140 (50.7)	276 (100.0)
Friends and relatives	18 (6.4)	84 (29.8)	127 (45.0)	53 (18.8)	282 (100.0)
Help wanted advertisements	6 (2.1)	77 (26.9)	89 (31.1)	114 (39.9)	286 (100.0)
Direct application to employers	3 (1.1)	34 (12.2)	148 (53.2)	93 (33.5)	278 (100.0)
Others	1 (6.2)	3 (18.8)	8 (50.0)	4 (25.0)	16 (100.0)

relatives, direct application to employers, and help wanted advertisements. Private and state employment agencies did not appear to be effective tools at all in seeking reemployment.

Tables 64 and 65 summarize factors that respondents claim caused them difficulty in gaining reemployment. The most important factor contributing to their difficulties was the fact that they felt there were no jobs available to match their training and experience. Other significant factors were that they felt that they were either too old or that the wage and salary offers were too low.

TABLE 64. DISTRIBUTION OF FIRST MAILING RESPONSES BY REASONS FOR DIFFICULTY  
IN FINDING RE-EMPLOYMENT FOR THOSE PERSONS STILL UNEMPLOYED  
(COUNT/PERCENTAGES)

Difficulties	Most Important Difficulty	Second Most Important Difficulty	Third Most Important Difficulty	Total No. of Responses
Too young	6 (1.0)	6 (1.1)	3 (0.6)	15 (0.9)
Too old	112 (18.2)	108 (18.9)	74 (14.0)	294 (17.1)
Too little education	11 (1.8)	42 (7.3)	41 (7.7)	94 (5.5)
Too extensive training required	6 (1.0)	26 (4.5)	37 (7.0)	69 (4.0)
Too specialized education	3 (0.5)	29 (5.1)	31 (5.8)	63 (3.7)
Too low wage/salary offers	53 (8.6)	120 (21.0)	106 (20.0)	279 (16.2)
Not willing to relocate	6 (1.0)	11 (1.9)	36 (6.8)	53 (3.1)
Job opportunities not in desirable location	11 (1.8)	51 (8.9)	58 (10.9)	120 (7.0)
No available jobs to match training and experience	358 (58.3)	130 (22.7)	69 (13.0)	557 (32.5)
Other	48 (7.8)	49 (8.6)	75 (14.2)	172 (10.0)
Total	614 (100.0)	572 (100.0)	530 (100.0)	1716 (100.0)

TABLE 65. DISTRIBUTION OF FOLLOW-UP MAILING RESPONSES BY REASONS FOR DIFFICULTY IN FINDING  
RE-EMPLOYMENT FOR THOSE PERSONS STILL UNEMPLOYED (COUNT/PERCENTAGES)

Difficulties	Most Important Difficulty	Second Most Important Difficulty	Third Most Important Difficulty	Total No. of Responses
Too young	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.3)
Too Old	26 (20.0)	16 (13.2)	15 (13.8)	57 (15.8)
Too little education	4 (3.1)	10 (8.3)	8 (7.3)	22 (6.1)
Too extensive training required	0 (0.0)	5 (4.1)	10 (9.2)	15 (4.2)
Too specialized education	0 (0.0)	11 (9.1)	6 (5.5)	17 (4.7)
Too low wage/salary offers	18 (13.9)	29 (24.0)	29 (26.6)	76 (21.1)
Not willing to relocate	2 (1.5)	3 (2.5)	5 (4.6)	10 (2.8)
Job opportunities not in desired location	2 (1.5)	10 (8.3)	11 (10.1)	23 (6.4)
No available jobs to match training and experience	71 (54.6)	32 (26.4)	19 (17.4)	122 (33.9)
Other	7 (5.4)	5 (4.1)	5 (4.6)	17 (4.7)
Total	130 (100.0)	121 (100.0)	109 (100.0)	360 (100.0)

DATA PROCESSING PROCEDURES

Two basic data processing methods were used to summarize the data collected by the survey. The first method utilized one of the programs in the BIMD series of statistical programs prepared by the University of California. The program was BMD02S which analyzes data through a contingency table analysis. This program was chosen because of the utility of its output. It produces a cross-tabulation frequency table for two variables at a time, as well as percentage distributions for the table entries, and the row and column totals. In addition, it calculates the chi-square statistic measuring the statistical dependency between the two variables being tabulated. Furthermore, it is a very versatile program in that it allows more freedom in specifying the intervals at which the data is to be tabulated, and it is virtually unlimited in the number of observations which can be tabulated.

In addition to using this program, special routines were programmed to allow for more detailed summaries of the data. These special routines were primarily programmed to display the data according to the skill classification factor cross-tabulated with other variables. The entries in the table consisted of averages--average length of unemployment, average percent of time unemployed since layoff, average Federal, State and local revenue loss, and average personal loss--and cell frequencies, or counts, for each cell of the cross-tabulation. Furthermore, separate tabulations were programmed for each of the four categories of employment status (permanently employed, temporarily employed, unemployed/seeking work, and left the work force) and for each sex as well as total response.

Average length of unemployment was calculated from the history of unemployment provided by the respondents. They were asked to list the month and year in which each of their periods of unemployment began and ended. Differences were calculated, in terms of weeks, which were summed over periods of unemployment, and these sums were averaged for each cell of the cross-tabulation being prepared.

The percent of time unemployed since layoff was calculated as the ratio of the total time unemployed to the total time transpired from the time of the layoff to the date of mailing of the questionnaire, February 12,

1971. These percentages were averaged for each cell of the cross-tabulation.

Economic loss calculations were based on data collected from several sources:

- (1) Department of the Treasury, Internal Revenue Service, Statistics of Income, 1968 (Individual Tax Returns),
- (2) U. S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 1970,
- (3) Commerce Clearinghouse, Inc., State Tax Handbook, October 1, 1970,
- (4) Tax Foundation, Inc., City Income Taxes, 1967,
- (5) The Council of State Governments, Income and Sales Taxes: The 1970 Outlook, January, 1966,
- (6) Optional Sales Tax Tables from Income Tax Return Instructions for 1968, 1969, and 1970, and
- (7) Office of the Judge Advocate General, USAF Headquarters, All States Income Tax Guide, December, 1970.

For the calculations of revenue losses (Federal, State, and Local), actual estimated incomes were first stratified into adjusted income groups according to the state location of the plant from which the individual was laid off. (It was assumed that a person's location remained the same as the plant location from which they were laid off.) Table 66 summarizes the stratification used, showing the intervals for actual salaries which define the adjusted income group for each state location.

Federal revenue loss was calculated by first adjusting actual incomes and then applying a tax factor. The adjustment factors applied to actual income are shown in Table 67. These factors were multiplied by actual incomes to yield adjustable taxable income. Table 68 shows the factors used to calculate Federal income taxes based upon adjusted taxable incomes and number of dependents reported. The adjusted taxable income was multiplied by the appropriate factor from the table to estimate Federal Income Taxes. These calculations were made for both the estimated actual



TABLE 66. STRATIFICATION INTO ADJUSTED INCOME GROUPS BASED UPON  
ACTUAL SALARY AND GEOGRAPHIC LOCATION

Adjusted Income Group \ State	Alabama	California	District of Columbia	Florida	Louisiana	Mississippi	New Jersey	Texas	Others (National Averages)
	0	0	0	0	0	0	0	0	0
1	2800	2600	2600	2500	2300	2700	2700	2600	2600
2	5500	5200	5100	4900	5300	5300	5300	5200	5200
3	8700	8200	8000	7600	8400	8300	8300	8200	8200
4	11600	11000	10700	10200	11200	10800	10800	10900	10900
5	14200	13500	13200	12500	13700	13600	13600	13400	13400
6	16500	15600	15300	14500	15900	15700	15700	15500	15500
7	18300	17300	16900	16100	17600	17400	17400	17200	17200
8	18700	17700	17400	16500	18100	17900	17900	17700	17600
9	and over	and over	and over	and over	and over	and over	and over	and over	and over

TABLE 67. ADJUSTMENT FACTORS USED TO CONVERT ACTUAL INCOMES  
TO ADJUSTED TAXABLE INCOMES

Adjusted Income Group \ State	Alabama	California	District of Columbia	Florida	Louisiana	Mississippi	New Jersey	Texas	Others (National Averages)
1	1.073	1.133	1.158	1.218	1.332	1.125	1.125	1.138	1.140
2	1.083	1.144	1.169	1.229	1.123	1.136	1.136	1.149	1.151
3	1.036	1.094	1.118	1.178	1.073	1.086	1.086	1.098	1.100
4	1.036	1.094	1.138	1.178	1.073	1.105	1.105	1.098	1.100
5	1.054	1.114	1.179	1.197	1.093	1.105	1.105	1.118	1.120
6	1.092	1.154	1.241	1.240	1.132	1.145	1.145	1.159	1.160
7	1.149	1.214	1.383	1.304	1.191	1.205	1.205	1.219	1.221
8	1.281	1.353	1.565	1.454	1.327	1.343	1.343	1.358	1.361
9	1.647	1.740	1.778	1.870	1.707	1.727	1.727	1.747	1.750

TABLE 68. FACTORS USED TO ESTIMATE FEDERAL INCOME TAX

Adjusted Income Group \ Dependency Group	One Dependent	Two Dependents	Three Dependents	Four Dependents	Five Dependents	Six or more Dependents
1	.066	.047	.054	.000	.000	.000
2	.135	.087	.068	.046	.009	.000
3	.165	.123	.109	.087	.051	.025
4	.190	.144	.134	.121	.098	.059
5	.213	.160	.148	.137	.117	.079
6	.235	.172	.160	.153	.135	.093
7	.260	.184	.172	.166	.150	.106
8	.284	.195	.182	.178	.162	.121
9	.342	.239	.223	.220	.204	.144

income of the respondent and the estimated expected income had he not been laid off. The Federal revenue loss (or gain) was estimated as the difference between the two estimated Federal income taxes.

Tables 69 through 76 were used to calculate state and local sales tax revenues. The sales tax loss (or gain) was calculated as the difference between estimated actual sales tax and estimated expected sales tax in the case of no layoff.

Separate state income tax models were programmed, wherever applicable for each of the states represented by respondents. Table 77 summarizes the procedures followed. The basic approach was to first estimate taxable income from adjusted income less allowable deductions. Then formulas for calculating income tax (according to state taxing methods) were applied to the taxable incomes and further allowable deductions were subtracted. Finally, the difference between estimated actual and estimated expected state or local income taxes was calculated as the revenue loss (or gain).

Personal loss or gain was based upon several categories of costs or income experienced by the respondents. These were:

- (1) differences between expected wages if there had been no layoff and actual wages earned,
- (2) difference in Federal, State, and local taxes paid under actual estimated income and expected income in the case of no layoff,
- (3) government compensation received,
- (4) lump sum payments received at the time of layoff,
- (5) job search and relocation costs, and
- (6) any other costs listed by the respondents.

These costs or income were combined into a total personal loss or gain for the respondents.

Once these calculations of economic loss or gain were completed, they were averaged for each cell of the cross-tabulations specified and the averages were listed.

TABLE 69. AVERAGE SALES TAX PER YEAR BY ADJUSTED INCOME GROUP AND NUMBER OF DEPENDENTS FOR THE STATE OF ALABAMA

Adjusted Income Group \ Dependency Group	One Dependent	Two Dependents	Three Dependents	Four Dependents	Five Dependents	Six or more Dependents
1	\$ 47	\$ 55	\$ 62	\$ 67	\$ 72	\$ 75
2	65	80	90	98	106	110
3	89	113	126	136	149	155
4	110	141	156	171	186	195
5	129	168	185	203	220	232
6	147	192	212	232	251	267
7	162	214	236	260	280	300
8	182	234	266	287	310	333
9	222	274	310	340	370	400

TABLE 70. AVERAGE SALES TAX PER YEAR BY ADJUSTED INCOME GROUP AND NUMBER OF DEPENDENTS FOR THE STATE OF CALIFORNIA

Adjusted Income Group \ Dependency Group	One Dependent	Two Dependents	Three Dependents	Four Dependents	Five Dependents	Six or more Dependents
1	\$ 40	\$ 40	\$ 46	\$ 46	\$ 50	\$ 50
2	62	62	71	71	77	77
3	92	92	105	105	115	116
4	120	120	134	134	149	151
5	145	145	162	162	179	182
6	169	169	189	189	209	212
7	192	192	213	213	237	241
8	216	216	237	237	265	268
9	263	263	285	285	317	327

TABLE 71. AVERAGE SALES TAX PER YEAR BY ADJUSTED INCOME GROUP AND NUMBER OF DEPENDENTS FOR THE DISTRICT OF COLUMBIA

Adjusted Income Group \ Dependency Group	One Dependent	Two Dependents	Three Dependents	Four Dependents	Five Dependents	Six or more Dependents
1	\$ 34	\$ 39	\$ 48	\$ 48	\$ 52	\$ 52
2	50	59	70	70	77	77
3	69	84	98	98	108	111
4	85	107	122	122	136	142
5	99	128	143	143	161	169
6	113	148	163	163	184	196
7	125	166	181	181	206	220
8	137	185	199	199	227	244
9	161	222	235	235	271	293

TABLE 72. AVERAGE SALES TAX PER YEAR BY ADJUSTED INCOME GROUP AND NUMBER OF DEPENDENTS FOR THE STATE OF FLORIDA

Adjusted Income Group \ Dependency Group	One Dependent	Two Dependents	Three Dependents	Four Dependents	Five Dependents	Six or more Dependents
1	\$ 36	\$ 36	\$ 44	\$ 44	\$ 47	\$ 47
2	57	57	67	67	72	72
3	84	84	96	96	103	103
4	109	109	122	122	132	134
5	133	133	146	146	159	164
6	155	155	168	168	183	191
7	176	176	189	189	206	217
8	197	197	210	210	229	243
9	239	239	252	252	275	295

TABLE 73. AVERAGE SALES TAX PER YEAR BY ADJUSTED INCOME GROUP AND  
NUMBER OF DEPENDENTS FOR THE STATE OF LOUISIANA

Adjusted Income Group \ Dependency Group	One Dependent	Two Dependents	Three Dependents	Four Dependents	Five Dependents	Six or more Dependents
1	\$ 24	\$ 28	\$ 35	\$ 35	\$ 38	\$ 38
2	35	43	51	51	56	57
3	49	61	71	71	79	82
4	60	76	88	88	99	103
5	71	91	103	103	118	124
6	80	105	118	118	134	142
7	89	117	130	130	149	160
8	98	129	142	142	164	178
9	116	153	166	166	194	214

TABLE 74. AVERAGE SALES TAX PER YEAR BY ADJUSTED INCOME GROUP AND  
NUMBER OF DEPENDENTS FOR THE STATE OF MISSISSIPPI

Adjusted Income Group \ Dependency Group	One Dependent	Two Dependents	Three Dependents	Four Dependents	Five Dependents	Six or more Dependents
1	\$ 58	\$ 69	\$ 83	\$ 83	\$ 91	\$ 91
2	83	103	120	120	132	132
3	113	144	165	165	183	187
4	138	181	203	203	227	237
5	161	214	237	237	267	283
6	182	244	269	269	303	326
7	200	272	298	298	337	366
8	218	300	327	327	371	406
9	254	356	385	385	439	486



TABLE 75. AVERAGE SALES TAX PER YEAR BY ADJUSTED INCOME GROUP AND NUMBER OF DEPENDENTS FOR THE STATE OF NEW JERSEY

Adjusted Income Group \ Dependency Group	One Dependent	Two Dependents	Three Dependents	Four Dependents	Five Dependents	Six or more Dependents
1	\$ 19	\$ 19	\$ 19	\$ 19	\$ 25	\$ 25
2	32	32	32	32	39	39
3	50	50	50	50	58	58
4	66	66	66	66	74	74
5	83	83	83	83	91	91
6	99	99	99	99	105	105
7	114	114	114	114	120	120
8	130	130	130	130	135	135
9	161	161	161	161	164	164

TABLE 76. AVERAGE SALES TAX PER YEAR BY ADJUSTED INCOME GROUP AND NUMBER OF DEPENDENTS FOR THE STATE OF TEXAS

Adjusted Income Group \ Dependency Group	One Dependent	Two Dependents	Three Dependents	Four Dependents	Five Dependents	Six or more Dependents
1	\$ 18	\$ 18	\$ 23	\$ 23	\$ 25	\$ 25
2	28	28	35	35	38	38
3	42	42	50	50	55	56
4	54	54	63	63	70	71
5	65	65	75	75	84	86
6	76	76	87	87	97	99
7	86	86	97	97	109	112
8	96	96	107	107	121	125
9	116	116	127	127	145	151

TABLE 77. PROCEDURES FOR CALCULATING STATE INCOME TAXES

State	Deduct Federal Income Tax	Exemptions Before Calculating Taxes	Exemptions After Calculating Taxes	Exemptions By Number of Dependents						Tax Formula
				1	2	3	4	5	6 or more	
Alabama	Yes	Yes	No	\$1500	\$3000	\$3300	\$3600	\$3900	\$4200	Tax = .015 (First \$1000) +.030 (Next \$2000) +.045 (Next \$2000) +.050 (Remainder)
California	No	No	Yes	25	50	58	66	74	82	Tax = .01 (First \$1000) +.02 (Next \$1500) +.03 (Next \$1500) +.04 (Next \$1500) +.05 (Next \$1500) For One Dependent Tax = .01 (First \$1000) +.02 (Next \$3000) +.03 (Next \$3000) +.04 (Next \$3000) +.05 (Next \$3000) +.06 (Next \$3000) +.07 (Next \$3000) +.08 (Next \$3000) +.09 (Next \$3000) +.10 (Remainder) For Two or More Dependents
District of Columbia	No	Yes	No	1000	2000	2500	3000	3500	4000	Tax = .02 (First \$1000) +.03 (Next \$1000) +.04 (Next \$1000) +.05 (Next \$2000) +.06 (Next \$3000) +.07 (Next \$4000) +.08 (Next \$5000) +.09 (Next \$8000) +.10 (Remainder)
Florida										No Income Tax
Louisiana	No	Yes	No	2500	5000	5400	5800	6200	6600	Tax = .02 (First \$10,000) +.04 (Next \$40,000) +.06 (Next \$50,000)
Mississippi	No	Yes	No	4000	6000	6000	6000	6000	6000	Tax = .03 (First \$5000) +.04 (Remainder)
New Jersey										No Income Tax
Texas										No Income Tax

APPENDIX

SURVEY QUESTIONNAIRE

## A Survey of Employees Affected by Reductions in NASA Contracts

The National Aeronautics and Space Administration, with the assistance of Battelle Memorial Institute, is conducting a survey of contractor employees affected by reductions in the NASA program. The information gained as a result of this study will be useful in achieving a better understanding of the economic impact of aerospace contract cutbacks; in assessing the future availability of aerospace skills for application to new space, aeronautical, and other scientific and technological activities; in developing improved programs to cushion the adverse effects of contract cutbacks; and in solving the re-employment problems of workers who have been laid off. Specifically, the objectives of this study are:

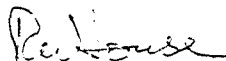
- (1) to determine the extent and duration of your unemployment and the extent to which your skills are presently being utilized;
- (2) to identify major obstacles you may have encountered in finding other jobs;
- (3) to evaluate the assistance you received in seeking reemployment;
- (4) to investigate the occupational and geographic mobility of unemployed aerospace workers; and
- (5) to determine the kind of employees affected by the cutbacks, the number of family members affected, and the resources they had to draw on during the transition to other employment.

Information of this kind can best be provided by those who have actually experienced a layoff in the aerospace industry. Accordingly, we have drawn a representative sample of such individuals to whom we are sending the enclosed questionnaire. For this study to be successful, it is necessary that all members of the sample provide complete answers to all the questions, whether or not they have experienced difficulties as the result of the layoff. May we ask you to cooperate in this important study by returning the completed questionnaire within 3 days of receipt, using the enclosed pre-addressed postage-paid envelope.

Your answers to this questionnaire will be treated as confidential. No information identifying specific individuals will be released to any outside organizations or individuals.

Thank you for your assistance.

Sincerely yours,



R. W. House  
Manager  
Social and Systems Sciences Section

BATTELLE MEMORIAL INSTITUTE  
Columbus Laboratories  
505 King Avenue  
Columbus, Ohio 43201

**General Instructions:**

Wherever information is requested, please enter the data in the blanks provided. If a choice is offered, please enter the number which most closely matches your choice in the dash(es) provided to the right of the questions. Place only one number on each dash. The position of the decimal point or commas for numerical answers has been indicated in the answer space. The small numbers below many dashes are for Battelle's data-processing purposes only. Where dates are requested, please indicate months by the numbers 1 to 12 and give the last two digits of the year. For example, February 9, 1969, would be 02/09/69.

# QUESTIONNAIRE FOR AEROSPACE EMPLOYEES AFFECTED BY NASA CONTRACT REDUCTIONS

The following questions pertain to your layoff from

Today's Date      /      /       
                    6                    11

## 1. FORMER EMPLOYMENT

A. Did you relocate when you accepted the job from which you were laid off?..... 12

(1) Yes      (2) No

If yes, please indicate location you moved from.

County \_\_\_\_\_

State \_\_\_\_\_

Zip Code.....

B. What kind of work were you doing at the time of your layoff (e.g., stock clerk, typist, mechanical draftsman, electrical engineer)?

C. Please indicate your wage or salary (before taxes) at the time of your layoff and the number for the time period on which it was based. (For example enter "2" for "per week" if your wages were weekly.).....\$ \_\_\_\_\_

(1) Hour                      (4) Month } ..... 25  
 (2) Week                    (5) Year } .....  
 (3) 2-Week

D. Considering your income and that of your spouse and other family members living with you at the time, what percentage of your family's total income was provided by your job at the time of your layoff?

(1) 0-19%                      (4) 60-79% } ..... 26  
(2) 20-39%                      (5) 80-99% }  
(3) 40-59%                      (6) 100% }

## 2. HISTORY OF EMPLOYMENT/UNEMPLOYMENT

A. What is your current employment status?

(1) I am employed at a job which I consider permanent  
(2) I am employed at a job which I consider temporary  
(3) I am not working but I am seeking a job  
(4) I am not working and I am not currently seeking a job because

}..... 27

(1) I am retired  
(2) I am taking a vacation  
(3) I am going to school  
(4) I have family responsibilities  
(5) I am ailing  
(6) Other (specify)



## 2. CONTINUED

B. Please summarize your history of employment and unemployment since January, 1968, by indicating the months and years of each period of unemployment.

	FROM		TO	
	MONTH	YEAR	MONTH	YEAR
First period of unemployment .....	29	/	—	—
Second period of unemployment .....	—	/	—	—
Third period of unemployment .....	—	/	—	—
Fourth period of unemployment .....	—	/	—	60

C. Have you received unemployment compensation at any time since January, 1968? .....

61

(1) yes

(2) no

If yes, indicate the total number of weeks compensated, and the average compensation per week

Weeks..... — —

Dollars/week ..... \$  $\frac{64}{64}$  — .00

D. Have you received any other financial assistance from a government agency at any time since January, 1968? .....

67

(1) yes

(2) no

If yes, indicate the total number of weeks and the average compensation per week.

Weeks..... — —

Dollars/week ..... \$  $\frac{70}{70}$  — .00

E. At the time of your layoff, did you receive a lump sum payment from the company? (e.g., severance pay, unused vacation, etc.) .....

73

(1) yes

(2) no

If yes, amount (nearest \$10) .....  $\frac{74}{74}$  — — .00

**IF YOU ARE CURRENTLY UNEMPLOYED, PLEASE GO TO QUESTION NO. 4**

FD (1)

## 3. CURRENT EMPLOYMENT (COMPLETE ONLY IF CURRENTLY EMPLOYED)

A. In what kind of business or industry are you currently employed? (Select one of the items below.)

- |   |  |         |
|---|--|---------|
| (1) aerospace                                       | (7) wholesale or retail trade          | } ..... |
| (2) manufacturing other than aerospace              | (8) finance, insurance and real estate |         |
| (3) agriculture                                     | (9) education                          |         |
| (4) mining  | (10) Federal Government                |         |
| (5) construction                                    | (11) State Government                  |         |
| (6) transportation, communication, public utilities | (12) Local Government                  |         |
|   | (13) Other (specify) _____             |         |

6

B. What kind of work are you doing (e.g., stock clerk, typist, mechanical draftsman, electrical engineer)? .....

Is this kind of work (1) full time (2) part time .....  $\frac{8}{8}$

How much is this kind of work related to your work at time of layoff? .....  $\frac{9}{9}$

(1) highly related

(2) somewhat related

(3) not related

Enter (1) for highly related, ... your aerospace experience? 10  
 (2) for somewhat related, ... skills you obtained through education?       
 (3) for not related at all ... skills you obtained through your other work experience?     

Enter (1) for worse,	Pay	—
(2) for same,	Fringe benefits	—
(3) for better	Working conditions	—
	Full use of skills	—
	Job security	—
	Commuting conditions	—
	Others (specify):	

(1) Hour                      (4) Month }  
(2) Week                    (5) Year } ..... 29  
(3) 2-Week

#### 4. EMPLOYMENT SEARCH

(1) much                      (3) little  
(2) some                      (4) none

(1) Too young	(7) Not willing to relocate	Most	
(2) Too old	(8) Job opportunities not in	Important	<u>31</u>
(3) Too little education	a desirable location		
(4) Too extensive retraining	(9) No available jobs to match	Second	
required	my training and experience	Most	
(5) Too specialized education	(10) Other (specify) _____	Important	<u>33</u>
(6) Too low wage or salary	_____		
offers	_____	Third	
	_____	Most	
		Important	<u>35</u>

CONTINUED

## 4. CONTINUED

B. Which of the following methods did you use to find work? Enter one of the following numbers for each method:

(1) Not available	Assistance from company from	
(2) Did not use	which you were layed off.....	37
(3) Used and found helpful	Labor unions.....	—
(4) Used but did not find helpful	Professional or trade organizations.....	—
	Private employment agencies.....	—
	State employment agencies.....	—
	Friends and relatives.....	—
	Help wanted advertisements.....	—
	Direct application to employers.....	—
	Other (specify) .....	45

C. What is the minimum weekly wage or salary before taxes you would require to accept a permanent job ...

... in your present location?	Dollars/week \$	46	—	—	.00
... if you had to relocate to some other part of the country?	Dollars/week \$	49	—	—	.00

## 5. RELOCATION EXPERIENCES

A. Since the time of your layoff indicated at the beginning of this questionnaire, have you relocated? .....

- (1) yes  
(2) no

52

B. If yes, how many miles did you move? .....

53 — — — — MILES

Please indicate location you moved to

County .....

State .....

Zip Code.....

58 — — — —

What would you say was the most important reason for the move? .....

63

(If more than one move, answer for first move.)

- |                                  |                                |
|----------------------------------|--------------------------------|
| (1) unemployed, seeking work     | (4) transferred by company     |
| (2) employed, seeking better job | (5) family or personal reasons |
| (3) to accept new job            | (6) other (specify) .....      |

C. If you relocated after layoff, please estimate the following approximate costs: (Indicate total costs, even if you did not pay the total.)

Job search (e.g., placement service fees, cost of resumes, etc.) .....	\$	—	—	—	.00
Commercial mover's charges .....	\$	—	—	—	.00
Actual money lost due to sale or repossession of your house (figure selling price minus the sum of purchase price, selling costs, and cost of improvements) .....	\$	72	—	—	.00
Other (specify) .....	\$	6	—	—	.00

D. When you were layed off, were you (1) renting (2) buying or owning a house.....

11

If buying, was your mortgage insured by (1) FHA (2) VA (3) Other .....

12

If buying, was it necessary for you to give up your house due to financial difficulties? .....

13

- (1) yes  
(2) no

## 6. APPLICATION OF AEROSPACE SKILLS

A. During your entire work career, for how many years have you worked in the aerospace industry (all companies)? ..... 14

B. On the basis of your principal duties, please indicate from the list below the type of job you held at the time of your layoff. .... 16

- |                                      |                            |
|--------------------------------------|----------------------------|
| (1) Production                       | (6) Basic research         |
| (2) Maintenance and support services | (7) Design and development |
| (3) Office and clerical support      | (8) Test and evaluation    |
| (4) Administration                   | (9) Documentation          |
| (5) Sales and marketing              | (10) Other (specify) _____ |

Also from this list, please indicate the type of job you now hold (if currently employed). .... 18

C. Are you currently making plans to change your industry of employment? ..... 20

- (1) yes  
(2) no

If yes, to what industry? \_\_\_\_\_

Are you currently making plans to change your occupation of employment? ..... 21

- (1) yes  
(2) no

If yes, to what occupation? \_\_\_\_\_

D. Would you be interested in returning to the aerospace industry?

- |  |                                 |           |
|--|---------------------------------|-----------|
| (1) I am already working in aerospace industry | (4) Yes, anywhere in the U.S.   |           |
| (2) No, I would not return                     | (5) Yes, in my present locality |           |
| (3) Maybe, depending on circumstances          | (6) Yes, in: .....              | <u>22</u> |
|  | (1) West Coast                  |           |
|  | (2) North East                  |           |
|  | (3) South East                  |           |
|  | (4) South West                  |           |
|  | (5) Mid West .....              | <u>23</u> |

E. We are interested in your opinions of the aerospace industry. Specifically, what do you think about layoffs in the aerospace industry? They are: ..... 24

- (1) Acceptable in view of the other benefits  
(2) An unfortunate hardship  
(3) Sufficient cause to leave the industry permanently

## 7. DEMOGRAPHIC DATA

A. Individual's data:

Your age (years) ..... 25

Marital status ..... 27

- (1) single (2) married (3) other (widowed, divorced, separated)

Sex ..... 28

- (1) male (2) female

CONTINUED

## 7. CONTINUED

## B. Family members supported in part or in total by you (include yourself)

NUMBER OF  
MEMBERS

0-6 years of age	<u>29</u> —
7-12 years of age	— —
13-18 years of age	— —
Over 18 years of age	<u>35</u> —

## C. Educational attainment

If Diploma/Certification received, enter year of highest award

Number of years attended

High School	<u>37</u> —	<u>19</u> —
Trade or Technical School	— —	<u>19</u> —
College or University	<u>45</u> —	<u>19</u> —

## D. College degree fields

(Enter number of field corresponding to each degree)

- |                             |                                  |
|-----------------------------|----------------------------------|
| (1) Physics                 | (9) Aeronautical engineering     |
| (2) Other physical sciences | (10) Industrial engineering      |
| (3) Life sciences           | (11) Other engineering           |
| (4) Social sciences         | (12) Professions (medicine, law) |
| (5) Humanities              | (13) Business                    |
| (6) Mathematics             | (14) Other (specify) _____       |
| (7) Mechanical engineering  | _____                            |

Associate  
Degree 49 —Bachelor's  
Degree — —Master's  
Degree — —Doctorate  
Degree 55 —

80 (3)

## A Survey of Employees Affected by Reductions in NASA Contracts

Several weeks ago, you received a questionnaire as part of a survey of contractor employees affected by reductions in the National Aeronautics and Space Administration program, which NASA is conducting with assistance from Battelle Memorial Institute. We are pleased to report that the response rate to this questionnaire has been quite good. However, because the complete success of a study of this type depends on an even higher return rate than we have obtained to date, we urgently request you complete and return your copy of the questionnaire.

If you have returned the completed questionnaire, please disregard this letter. On the other hand, if you have misplaced or have not received the original questionnaire, an additional copy is enclosed. May we ask your cooperation in this important study by returning the completed questionnaire within 3 days of receipt, using the enclosed addressed postage-paid envelope. We would be interested in any additional comments you may wish to make on the back of the questionnaire, or on a separate sheet.

The information gained as a result of this study will be useful in solving the reemployment problems of workers who have been layed off, in developing improved programs to cushion the adverse effects of aerospace contract cutbacks, in achieving a better understanding of the economic impact of contract cutbacks, and in assessing the future availability of aerospace skills for application to new space, aeronautical, and other scientific and technological activities.

Your answers to this questionnaire will be treated as confidential. No information identifying specific individuals will be released to any outside organizations or individuals.

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